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ADDRESSES.

PRESIDENT'S ADDRESS.

Before the Annual Session of the State Medical Society of Connecticut, June 8, 1891.

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Gentlemen of the Connecticut Medical Society and Honored Delegates: I congratulate you on this, the ninty-ninth convention of the Connecticut Medical Society.

The year which has brought us to this epoch in the history of this society has been one of remarkable interest and activity in medicine throughout the world. Other years may have seen as much of substantial progress, but the year now ending has been marked by greater enthusiasm and has never been surpassed in close and critical investigation. Medicine has been so brilliant in its possibilities, so inspiring in its hopes, that it has caught the eye of a sympathetic world that has hourly and eagerly watched for the tidings, heralded from the laboratory and the clinic.

The year was ushered in by a strange pandemic disease, going over the continents and crossing the seas with the swiftness of light. It challenged etiological recognition. It eluded the scrutiny of the myriad of lenses focused upon it. It demonstrated to the biologist that there are causes of disease more subtle and imponderable than the microbe.

The unprecedented gathering of physicians at the international congress at Berlin was a prominent event of the year, both in itself and because it became in the public mind linked with the great discovery of Koch. For a time a feeling of disappointment clouds the public mind, and clinical and preventive medicine must have a patient waiting. But sympathy is with the discoverer, and the hope still abides that many now incurable forms of disease will be prevented or ameliorated. Subjects generic, but in a certain sense subsidiary to the great discovery announced by Koch, the contagiousness of phthisis, the relation of bovine to human tuberculosis have been warmly discussed. Tremendous interest attaches to every feature of that disease that carries off one-ninth of the human family.

The anti-vaccine war has been carried on in England with more zeal than ever. Edgar Crookshanks, of London, authority on bacteriology, has published his views, being similar to those of Creighton in the Encyclopædia Britannica. The contest has been carried to Parliament and several reports have been made. But Jenner is not dethroned.

But we must close the retrospect of the year. Standing here under the lengthening shadows of the closing century of our history we had it in our minds to take some theme appropriate to its departure. But we turn aside from this, as well as from all the exciting themes of the day, and ask you to consider the

HEALTH OF THE SCHOOLS.

The health of the schools is a difficult matter to determine, as many conditional factors enter into the calculation. Probably no one, if asked the question as to the actual sickness or physical or mental impairment in the schools of this state, could give any answer approximative of the amount. And yet there are men who are well posted in health matters who can tell just how many have died in the State and of what and where they died, the difference being that those to whom we refer have a plan and method of getting the information they desire through their regular system of reports, while those having charge of the schools have no systematic health inspection or supervision, and hence scanty or imperfect records. If we consult the district or school register it gives the attendance and non attendance, but does not indicate in regard to t latter class whether they were absent from ness or otherwise.

Parents know something about their They have occasion to speak of thei of their pale appearance and langui headache, loss of sleep and appeti have made no satisfactory inve know very little about the schoo ods of study.

The board of school visitor vision of the schools and, as very near to the scholars, ra tion in the direction of her

demic is prevailing, nor do they make any special record or report of their inspection.

From the school board we go to the State Board of Education, the general headquarters of the schools. The items of interest from every district are at last supposed to center here and are tabulated even to the planting of a tree, blanks having been sent out to be returned with all the specified details. Here may be the place to find the facts of disease if any have existed. But in all the reports of the State Board for the last twenty-five years we scarcely remember to have seen, with one or two exceptions, anything especially relating to the health of the schools. Great irregularity of attendance is reported from many of the towns and much deplored, but nothing to show how much of this non-attendance was due to ill-health, though as a matter of fact, sickness is known to have prevailed at the time to the extent of making the discontinuance of the school necessary.

We come at last to Boards of Health, local and State. A valuable report is issued annually by the State Board which the State might well afford to distribute largely among the people. It makes valuable suggestions to the towns. It formulates inquiries and in turn gets responses from physicians and others. It discusses sanitary subjects, investigates local and epidemic diseases. There is almost no end of good work that it is doing, but we fail to find that school hygiene or school sickness has ever been to any extent mentioned or scientifically considered. A model school-house has been described; typhoid fever in Yale some three years ago was investigated and reported. But no systematic and thorough study of the health of the schools has been carried out, though there has been a suggestion that such an attempt would be made at some future time. Our State Board of Health may share, perhaps, the feeling of the local boards, that our schools are under the control and guidance of other men and other boards, and that it would be an intrusion to invade their precincts.

Again in our search we turn to the code of school laws to find some sanitary or health enactment, but out of the three hundred sections of the school laws nothing pertaining to the health the schools except the enactment which em- s the Board of School Visitors to compel tion. The State constitution does not reference to the schools, except to make for the school fund. Neither do the of this society, which is the general alth custodian of our State, show ission or investigation has been is line except in 1887, when Pres- in his address on nervousness, utterances on the effects of study. ries concerning the health of the schools have been futile. But the inference which might be drawn, viz., that there is no sickness in the schools, to our mind is not so strong as the suggestion which arises that the schools require that a more thorough inspection should be made in sanitary and health matters, to see whether or not any sickness exists.

It is a principle followed in all economic, social and civil interests to first investigate and get the data and facts. It is as much, or more, the object of this address to show the necessity of this work as to bring before you the evidence or the amount of ill health.

In other countries and in other States some inspections have been made, and there have been some partial inspections in our own State. In 1878, after the reports of the examinations for near-sightedness which had been made in the public schools of Europe and this country were published, the school visitors of Hartford caused an inspection to be made in two schools in this city, with the following result. In one examined by the late Dr. J. A. Steven 21 per cent. of the pupils were myopic; in another inspecfed by Dr. W. T. Bacon, of this city, 20 per cent. were found in like condition. When the prevalence of that change in the form of the eye conditioned largely upon badly constructed school rooms, affecting the amount and direction of the light, was ascertained by an inspection, its causes were inquired into and the disease has become much less prevalent. I visited, during the year, a new school house in another city of this State and the light was abundant, exceeding somewhat the amount required,—one-fourth of the floor space. It was stated that in the room having the oldest pupils no case of myopia was to be found, a confirmation of the good results growing out of inspection.

Dr. E. K. Root, in his report as consulting physician in the Normal School Gymnasium, says: "Out of a total of over five hundred and eighty pupils examined, one hundred and eighty-six—nearly one in three—show slight lateral curvature, elevation of one shoulder, stooping carriage, or unequal prominence of shoulder blades. Slight lateral curvature with elevation of the right shoulder was observed in a number of instances, and was undoubtedly due to faulty position at desk work, or badly arranged school desks and benches. The majority, however, show no constant change that can be ascribed to any one cause. Their condition is the result simply of lack of symmetrical exercise of both upper extremities during the period of growth."

Sir John Forbes says: "We lately visited, in a large town, a boarding-school containing forty girls; and we learnt, on close and accurate inquiry, that there was not one of the girls who had been at the school two years that was not more or less crooked."

These inspections made with reference to these deformities are frightful, and in connection with them I give the views of Dr. W. Arbuthnot Lane, Assistant Surgeon to Guy's Hospital and Surgeon to the Children's Hospital, Great Ormond street, London, who makes some timely remarks as to the condition of these deformities. "In the young subject the rate of growth of any portion of an epiphysial line varies inversely as the amount of pressure it transmits. In other words, if one-half of an epiphysial line transmits habitually an amount of pressure which is greater than normal, the amount of bone which it developes is correspondingly less than that normally produced. If, on the contrary, the other half of the epiphysial line is subjected habitually to a subnormal pressure, the amount of bone developed by it is proportionately greater than the normal. In all the resting postures the mechanism of the skeleton is such that one portion of a growing line is exposed to an abnormal pressure, while another portion is exposed to a much less, or even subnormal amount of pressure. The frequent assumption of a single attitude of rest, not corrected by suitable variations in the atttitudes of activity and rest, results finally in a progressive alteration in the form and function of the bones and joints." And we may add when these bony surfaces, changed in form, become dense and eburnated, they cannot be restored by treatment, either mechanical or by exercise, but the form of the skeleton is lost forever.

Dr. Root describes the majority of these deformities, much more common to girls, to the "lack of symmetrical exercise of both upper extremities." Dr. Lane would include also the lack of symmetrical attitudes of rest.

This opens for consideration not only the question of exercise, but turns attention to the school seats in use, and upon which we have, as a country, prided ourselves. But Mr. Northrup says: "The improved seats (the American) are recommended mainly as they favor erectness of posture. But it must be admitted that with poor seats, sometimes only deal planks, the posture of pupils in the French, Swiss and German schools is far better than that of American youth in our best furnished houses."

The American seats make a good furnishing for the room. But the schools are graded by scholarship rather than by size. In almost any of the school rooms we will find some older and larger pupil in a cramped position, and some smaller one with feet dangling in the air. If the deal benches are better adapted for combining "attitudes of activity with attitudes of rest," and varying them in character, then deal benches are the best seats.

We have offered these inspections as illustrations. Inspection, thorough and scientific, made in any direction would give unexpected results. As a specimen of a general inspection I refer to one made in Sweden and Denmark, two countries having the lowest mortality rates of any in Europe or in this country, and, after England, having the highest surplus of the birth over the death-rate. I quote from an abstract of a paper read by Prof. Axel Key, of Stockholm, at the International Congress at Berlin, and which paper attracted great attention in the Congress. He states that it was found in the schools of Sweden, by a very careful inspection, that out of 15,000 boys of the Swedish schools 40 per cent. were ill in one way or another. In the preparatory schools 17 per cent. in the lowest classes, 37 per cent. of the next higher class, and 40 per cent. of the highest class showed illness. Similar conditions were found in Denmark. With regard to the health of girls the state of things was frightful. The percentage of disease in the 3,000 girls mentioned above was sixty-one, out of which 36 per cent. suffered from chlorosis, as many from habitual headache, 10 per cent. from curvature of the spine, and 5 per cent from scrofula.

"These conditions," said Prof. Key, "were no doubt due to over-pressure." He concluded by suggesting that uniform international investigation should be made into the whole subject."

Our personal knowledge in regard to the sickness of the schools is not statistical nor numerical, but from a considerable amount of observation we can confirm in general the truth of the inspections which have been presented. We meet with sicknesses and prevailing diseases which have a direct reference to the schools, either to some unsanitary condition of the school-house, to the peculiarities of the school age, methods of study or to bad or indifferent management of the schools.

It is evident that inspection close and thorough will reveal disease. The same method if used will disclose the causes of many of them. We apply it to the

SCHOOL-HOUSE.

There have been great improvements in the construction of the school-house in the last thirty years. This is especially true of the larger and wealthier towns. Before this era, too often the school-house was a rude and plain structure, devoid of any architectural merit. Some of the best school-houses now take rank with the finest public buildings. In the rural and depopulated districts economy governs, and the school-house is hardly a fitting expression of any commensurate interest in education. But the graded schools have become institutional centers and an architect has no small task in many instances to devise plans equal to the wishes and expectations of the district and equal to the generous appropriation made. All this to a certain extent measures the popular interest in education.

Within the last few years my attention has been called to many of these school buildings both in and out of the State, and to some abroad. I shall refer for the most part to those in this immediate vicinity as best known to me and from their general standing can in no way be said to be exaggerated illustrations.

Mr. B. G. Northrup, the late Secretary of the State Board of Education of this State, having observed the schools of this country pretty extensively, and those in Europe, states in one of his later reports that we need not shrink from the comparison of our school-houses with any European country, and he also adds that no city of its size in America can show better school edifices than Hartford. As Mr. Northrup makes those of Hartford the best in the world for any place of its size, it is quite safe to assume that there are none better in the State than those in Hartford, and especially safe in this assumption as since Mr. Northrup's statement was made many have been reconstructed and some new ones built. My observation, as far as it goes, agrees with Mr. Northrup's statement. But I now introduce some facts concerning these same Hartford school houses taken from a report of the Board of School Visitors of this city in 1889, after quite a thorough general inspection had been made. As the report is one of length I refer to it without giving the exact language.

The Board says that no school building was found in a perfectly satisfactory condition; something unsafe or unsanitary was found in all of them. Many of them were unsafe in the matter of fire from their heating arrangements and in the event of burning there was no ready way of escape. Others had tile soil pipe within the building with broken or open joints and unventilated; foul and unsanitary water-closets within the building and, if outside, not sufficiently separated from the school-house; empty traps, crowded and insufficiently ventilated rooms. Insufficient heat and light, flues which were dead, or if they worked at all, worked in the wrong direction, poor locations. One large central and wealthy district had all these defects and more. The school-board says of this school-house, "Words fail us in speaking of this school building. It is thoroughly unsafe and out of order from beginning to end."

Of one school-house Mr. Northrup says: "I do not know where else in the world can be found a school-house for the children of operatives surpassing it." The committee found this school-house to be a four story building, entrance upon the middle of each side into a common hall from which ran a central stairway to the top of the building. Underneath this lower hall through which all the children passed in going to and fro was the furnace. In the basement at either end were the water-closets or water troughs or latrines, and these were adjoining the hot air chambers. The committee recommended the removal of the latrines and the erection of a fire escape.

Mr. Northrup honors another school edifice by putting an engraving of it in his report. The acting school visitor of the town at that time informed us that he had seen in this building seventy-five scholars crowded into a room fifteen by twenty feet. That does not now exist. Such are some of the faults of the model buildings in this fair city so distinguished for its school edifices. There is no doubt but that a thorough inspection of school-houses in any city or town of the State would reveal the same or a worse state of things. It was not my purpose to speak of any special points which this inspection brought to light, although many of these conditions cannot exist without being the fruitful cause of disease. We pass, then, over the site or locations of the buildings and the condition and use of the basement stories, mostly occupied with the heating apparatus and as play rooms for the children, the plumbing worn out in the older buildings and imperfect in others, the cause of filth diseases in some districts. More attention however, is being given to sanitary plumbing, and a healthy fear has arisen in the public mind for blood poisoning. All this has been brought about by sanitary study and efforts of the Boards of Health. But there are one or two items in this part of our subject upon which we wish to remark.

VENTILATION.

The most serious defect found in the schools under examination was the imperfect ventilation. Much attention has been given of late to this subject, but among the masses of the people the fundamental principles are not understood, and our architects and civil engineers have not come to any concensus of views as to the best methods to be employed. It is my deliberate opinion that bad ventilation has more to do with the impaired health of the schools than any other one thing. Most of the Hartford schools depend upon natural ventilation. Only one school has mechanical appliances and two or three have partial aspiration. The impure air escapes through flues, but they are insufficient in size and badly located. Hence resort is had to open windows and doors to obtain any fair degree of ventilation. The general result is that there is no system.

It would exceed our limits to discuss the question of a perfect system. But such a system is possible. Let the dimension and requirements of a school-house be known, the amount of fresh air needed for each scholar per minute, the temperature of the air on admission, temperature required for the room, rate of air currents by actual air tests, the highest allowable limits of carbonic acid, no open doors or windows. A con-

tract including all these specifications could be made with a guarantee for its fulfillment.

No air should be used for respiration that has over seven vols. of carbonic acid to ten thousand of air, ordinary air having four vols. The schools to which Mr. Northrup refers cannot keep, by the ventilation provided, the carbonic acid down to thirty vols. Open windows are resorted to, but they are uncertain and unsafe. Uncertain because they disturb the flue ventilation and should the external and internal temperature be alike they would afford little ventilation, and are unsafe because if there is an exchange of air, dangerous draughts are occasioned. To this poisoned air of respiration is added the natural excretions of the skin, the emanations from the uncleanness of the body and clothing. Some children bring with them the characteristic odors of their homes, the fumes of the kitchen, the sickly smell of unventilated rooms. Besides, the air of the school room is impregnated by many of the odors of disease, the discharge of ulcers, decayed teeth, bad throats and feted eructations. The school room thus becomes the mart of the district, where the germs of disease and putrefaction find their best place for development and dissemination. People have come to feel the imperative need of attending to sewerage to carry off the fecal and urinary wastes so as to prevent accumulations and hurtful effluvia.

It is well to bear in mind that as much weight of matter emanating from the lungs and skin is to find its way out of the flues and windows, as goes downward into the earth by way of the water-closets. We estimate from data on this subject, that a school-room of fifty pupils would throw off in the form of cutaneous and pulmonary exhalation, in one month of five hours each day, 750 lbs., which contains much putrescible matter, and in rooms deficient in ventilation this is precipitated, and gives in its decay the peculiar odor of the badly ventilated rooms. These respiratory impurities furnish the best possible conditions for the growth and dissemination of microbes. "Carnelly found in dirty school-rooms with the so called natural ventilation, in the same volume of air, nearly 2,000 living bacteria, while in mechanically ventilated schools there were from thirty to three hundred." Children from homes infected with germ diseases, consumption, scarlet fever and diphtheria, will poison the air of a room unless the floating germs are carried off by fresh currents of air.

The air space allowed for each child in the schools in Hartford is 225 cubic feet, with the air to be changed three times per hour. This is about one-third of the amount needed. But the Board of School Visitors has been asked to approve plans for a new building where the cubic space did not exceed 45 cubic feet per scholar. This is a very good illustration of local school management. Boston seems to be about as badly off, judged by the figures of the Report of the Chief of District Police. "In 1889, 163 school-houses in Boston were inspected, and 146 are without any modern or efficient means of ventilation, being dependent upon the old-fashioned shafts in the walls, aided here and there by small apertures through the external walls, all of which are too feeble to be called ventilation."

People do not sufficiently realize the hurtful nature of impure air—how it vitiates the blood and interferes with the circulation, accumulating in the right heart and lungs, and produces asphyxia in some degree; undermines the constitution; lays the foundation for serious organic disease, preëminently consumption. It is estimated by competent observers that 40 per cent. of all fatal diseases are due directly to impure air.

Dr. Cornelius Black, of London, in answering the question, "Which side of the heart is the more frequently affected by disease?" says that the carbonic acid, rendering the blood impure, debilitates the right side of the heart, and the bad air of school-houses, as now constructed, causes a dilated right heart, and tricuspid incompetency.

I know a young lad, robust and healthy, fond of school, but the air of the school-room gives him a headache which results in vomiting, unless he goes into the open air.

SAFETY FROM FIRE.

The School Board found seven buildings out of eleven unsafe for want of sufficient exit in case of fire. In these there was only a single possible way of escape, and that was from the centre of the building, and generally directly over the furnace or boiler, which was in the basement. Only two of the schools have the heating apparatus outside of the building.

This is a very important matter. In this country the destruction of school-houses, asylums and hospitals, by fire, being no infrequent accident. Even the alarm of fire among school-children is accompanied with panic, and often with serious loss of life. Safety demands that these buildings should be practically fire-proof, at least the corridors and stairways. The latter should be constructed of iron or stone, the wainscoting being of brick or tile. It requires some experience with the fearful calamity of fire to give emphasis to any words upon this subject. A few years ago, when the Hartford High School building was destroyed, though no lives were lost, the fire occurring in the night, yet it was easy then to get an appropriation for a fire-proof building. It has been in my experience to have witnessed some of the larger battles in the late civil war. I have seen the field covered with the slain; but the sight was not so sickening or revolting as when, in after years, in another State, I witnessed a long

row of little school-children burned or suffocated to death. The battle field told the story of heroism, of undying devotion to one's country, and the great sacrifice that loyal hearts were ready to make for the preservation of the Union, and the restoration of National authority. All this would live and go down through the ages in song and in story—but the smouldering ruins of the school-house and the little charred bodies only told the old familiar story of carelessness, indifference or greed, all to be forgotten in the passing of a day.

PECULIARITIES OF AGE.

There are certain conditions of age, growth, periodicity, and peculiarities belonging to the school age, affecting health. We designate the school age as from 5 to 15 years of age. This period has the lowest death-rate of any, being seven per thousand, while for all lives the death-rate is from eighteen to twenty per thousand, and is in great contrast to the preceding period of infancy, which, according to the census of 1880, in the first year of life has a mortality of 170 per thousand, and in the large cities the rate is much higher.

Of the deaths of school-children, the Pennsylvania State Board of Health shows that at least 30 per cent. were from diseases regarded as preventable.

But notwithstanding the low death-rate of the school age, there is on the other hand a high rate of disease, not accounted for by the special diseases of children, and which might be prevented by better sanitary conditions of the schools, and by a better appreciation of the laws of growth and development of childhood—preventing future invalidism. A child who rests upon the sacro-iliac synchondrosis of one side before there is a growth of the articulating surfaces, will develop lateral curvature. So a child, at the time when the peripheral nerves are comparatively larger than the nerve centres—when the spinal cord predominates over the brain, or the medulla oblongata possesses functional superiority, who should attempt the higher cerebral functions, will easily have exhaustion of the brain, ending in some form of neurosis or in cerebro-meningitis. The natural but unexplainable periods of retardation must be recognized and studied.

Prof. Key, before quoted, has made accurate observations concerning the law of growth and retardation in the schools of Sweden and Denmark. He reports on the measurements and weights of school-children which had been taken in Sweden and Denmark during the last ten years. The results obtained in 15,000 boys and 3,000 girls, showed that in the seventh and eighth years the increase in stature and weight was very marked in boys. Afterwards, however, a retardation occurred which lasted to the fourteenth year, in which a rapid increase of growth again occurred. This increase lasted up to the seventeenth year; it was most marked in the fifteenth year; the least increase in the preceding period was in the tenth year. The increase in growth was first in stature, and it was not until later that it also showed itself in the weight. The increase in weight lasted up to the seventeenth year, when the bodily development was complete. In girls the case was somewhat different. The decrease in growth after the eighth year was not so marked as in boys; in the twelfth year it had already given place to a great increase in height. The increase followed that of height, but exceeded it in the fourteenth year. In the seventeenth and eighteenth years the increase in height was but slight, the increase of weight, however, fell nearly to zero in the twentieth year. At that period growth seemed to be completed. Prof. Key says that the diseased percentages were highest in the period of retarded growth. And in the time of the greatest increase of growth they were the least.

Sometimes we are consulted because a child in these specified periods does not grow—is stunted; and again when a child is growing rapidly. In the one case there is apprehension of some disordered condition, and in the other that there will be.

TEMPERAMENT.

This is a natural condition, but is affected by school life. By the older physiologists much that is fanciful has been written concerning temperament. The kinds and combinations have been minutely described. This much is true, that there are certain constitutional differences in persons which grow out of the variety of relations and proportions existing between the constituent parts of the body, and which, to a certain extent, influence the dispositions and characters of men, and have a marked influence upon the functions of every part of the organism. Some men have a happy disposition, and, like Joseph Priestly, can go through life always cheerful, though suffering reproach at the hands of their fellow men. But for the many, the disposition is largely formed or fashioned in childhood. The parent or teacher can make or spoil the child in this critical age. They have an influence in this direction equal to or greater than the bile, lymph, or blood even, to impart a feeling of felicity, or gloom and depression. Felicity causes the heart to beat full and strong, brightens the eye, expands the chest, aids digestion, gives to every movement grace and steadiness. The old belief that pupils must have pain and suffering to acquire knowledge is exploded. Herbert Spencer formed his educational system quite largely upon good feelings. If we cannot go so far with him, yet we do not err in making the school and studies agreeable, and so healthful.

STUDY.

A full comprehension of the effect of study on the health requires a knowledge of the laws and limitations of the mental organism itself, and the union of this entity with the physical organization. The right conception of study—of education, is the systematic and symmetrical growth and development of mind and body. Such study produces healthful results, and is expanding to both mind and body. Study is not incompatible with health. It is a well-known fact that those who have devoted their lives to hard study have had a greater longevity than any other class of men. Take as an illustration the Presidents and Professors of Yale College. Of the nine Presidents who have died the average age was 70 years, and of forty professors the average age was 65⅓ years, and the average of all graduates of Yale in the eighteenth century was nearly 62 years. This is indeed a remarkable record.

But the mind requires a natural development of its powers, the faculties to be expanded in harmony with each other. Some teachers not only seem to look upon the mind as an entity to be handled separately from the body, but that any faculty can be cultivated *ad libitum*. This is always at the risk of an abnormal mental development and of a general impairment, initiated from a local mental strain or over-doing. That process of education called memorizing is useless and hurtful. It not only takes away from the fullness of other mental processes, but may imperil the whole organ.

Dr. B. N. Comings, in his address to this society as President six years ago, on nervousness, had examined this whole matter of over-study very thoroughly by actual inspection and by means of circular letters, and says as a result of his inquiries, that "fully one third of the children in our graded schools suffer seriously from over-work in their studies; then become nervous and irritable at home, lose their appetites, and run down generally during term time. Nervousness is becoming a prominent characteristic. Diseases of the nervous system are on the increase."

Dr. H. P. Stearns, in his work upon "Insanity, its Causes and Prevention," in his admirable chapter on the influence of education, says in reference to the competition for prizes and scholarships, "from personal observation, I am satisfied that some of the brightest minds are essentially ruined for the accomplishment of any large work in life by such a course of conduct in their education, who, under some other course of management, in which these mental tendencies could have been better understood and guided, might have been saved; and that often these are minds with the best natural endowments."

Dr. Andrew Clark says, "I am a witness to the grave and sometimes irreparable mischief done at schools and in working for competitive examinations." There is a large amount of medical experience recorded of the pernicious effects of undue study, long lessons, many studies, memorizing, competition, prizes, scholarship, etc. Every physician is meeting with cases of brain trouble from something vicious in the plan and course of study. Its range is all the way from brain weariness and nervous exhaustion to congestion and fatal inflammation of the brain or insanity. We have seen many such unfortunate cases, but it is difficult to convince the teacher or parent that study was an element in the case. They always ascribe the result to some accident, some blow or fall. Sometimes a slight injury may be the exciting cause of meningitis in one whose brain has been predisposed by over-excitement in study. We have not in this country reached that fearful condition indicated by this statement, taken from one of our journals which reads thus: "The statistics of suicide among school children in Prussia during the six years, from 1883 to 1888 inclusive, show that during that period two hundred and eighty-nine children took their own lives. Of this number two hundred and forty were boys, and forty-nine girls. In 29.8 per cent. of the cases no cause could be assigned; but as regards the others, fear of punishment or of the examinations, excessive ambition and insanity were found to be the inciting reasons. These figures are amazing and seem hardly credible."

Instead of this impulsive and tragic form of German or European insanity, our children may receive mental strains, which, like any other form of brain injury, is rarely fully repaired, and may end later on in mental incapacity or insanity.

Granting the European tendency to suicide, still it shows that the school system of Germany fails to develop the individual into a strong, independant and regulative character, and is a lesson from the older to the newer civilization.

The suicides in the whole of Europe, of boys and girls, amount to two thousand annually, and there seems to be an ethnological fact connected with it without any ethnological reason. For statistics show that the central area of European suicides is Germany and the borders of the adjoining States. But the German children in this country are not characterized by a suicidal mania. The Americans do not find, on the other hand, that the climate of Germany is depressing. We attribute youthful suicide in Germany, so far as the schools go, in part to study, excessive ambition, and to a fear of punishment. Such punishment cannot be meted out to the derelict and delinquent in this country. The European schools seem despotic. Children are punished for offenses, and in ways that would not be tolerated in this country. I visited in Lucerne a fine, large school in the country, where the humane,

sympathetic, philanthropic educator Pestalozzi was born. Here the teacher who was my guide seemed to take pride in showing me the dark dungeons in the basement where the scholars were confined for any misdemeanor. When visiting the University at Leipsic I was invited to visit the prison cells to see the names and the works of art inscribed on the walls by incarcerated students. The rector of the University holds over the students the power of life and death.

AGE AND TIME OF STUDY.

A child is never too young to learn, but too young for a school of training before 7 or 8 years of age. The soft pliant brain has not steadfastness enough for reflective processes and soon tires of its perceptive glancings. I do not believe that the kindergarten furnishes the desideratum. It may be better than a poor home, but a poor substitute for a good one. The children in the kindergarten always look tired to me. Enforced play gives weary and sad looks.

The time of study in the schools does not at first sight seem excessive. But men who have distinguished themselves by brilliant learning have made short days. The teacher finds the day long enough. The discount and insurance clerks have but a little longer day. But it is the lessons that must be learned out of school, and the worry from lessons unlearned that cause most of the harm. The Boston schools forbid study out of school hours for the girls.

MANUAL AND INDUSTRIAL TRAINING AND EXERCISE.

In the early years of the schools, and now in the rural districts, the problem of exercise has been solved by the necessity of assigning to the children a certain amount of work. Our country abounds with frequent examples of the attainment of ultimate, physical, and intellectual success, where the conditions seem to have been a reciprocal influence of work and study, and such necessity has helped to develop manhood and a right feeling of the value and dignity of labor. But at the same time there ought to be mingled with this work and study the graceful and frolicsome games and amusements in which children engage. Sportive activities should make a part of every child's physical programme. Every one has seen the energy and zeal with which children carry out their playful sports. Such positive joy and satisfaction is highly invigorating to mind and body. But even this exercise should be within limits. A child may physically over-act and be unfit for mental improvement. Many parents and teachers have the impression that a child in danger of harm from excessive study may be sufficiently guarded from injury by an extra amount of physical exercise. This is entirely erroneous. There is only so much nervous force and energy to be expended, and if it is exhausted mentally it cannot be regained by any demand made upon the physical energies. Mind and body must, to reach the highest results, be exercised proportionately and within certain and proper limits. We have seen cases of nervous exhaustion, disqualifying for any study, brought on by over physical exertion. Many of our higher institutions of learning, and some of our cities, are providing a gymnasium for regulative exercise, and industrial schools where some useful experience can be obtained in the right use of mechanical tools, etc.

We hurry to make the boy an adult, forgetting that the longer we can keep him young the longer will he live as a man. Exercise, either as work or play, as we have implied, must be within limits. We have seen by the sharp fierceness of competition in games, more frequently, injury of some physical organ, hernia or cardiac disease, and nervous exhaustion from exercise and study combined.

The natural system of instruction of Pestalozzi and Frœbel, the former taking the form of industrial training, or the older children, the latter of the kindergarten for the younger, is now sought to be applied to the children of intermediate ages, and to make manual and industrial training common to all the schools. How this shall be done is not our problem to solve, or how it will effect respectively the educational and economic interests of society. But whether the sum of expended physical and mental energy will diminish the vitality of the child is the question for our consideration.

MANAGEMENT.

We use this word in its widest sense; we mean to include the legal provisions made for our schools and the personal supervision given to them. Some of the characteristic features of the Connecticut schools go back to the early settlement of the colony. Some things that were wise and good then might be changed for the better now.

SANITARY LEGISLATION.

As has been intimated there has never been any sanitary legislation for the schools. They have been under the general supervision of boards of school visitors, and, as a part of the towns, subject to such health regulations as the local Boards of Health have adopted.

We have shown by the unsanitary conditions of the schools, by the amount of sickness which is preventable, that local supervision by school and health boards without special legislation has proved itself inadequate.

The Boards of School Visitors are not, as a rule, composed of men who have made health matters a study. The Health Boards are political appointments for the most part and sometimes made

in the interests of the opposition. In some few towns of the State they demonstrate the usefulness of the organization. But the present work of these boards through the State is forced upon our attention when we read what the secretary of the State Board has to say publicly of them. "The most prevalent heresy now existing among the health officials of the small towns of Connecticut is a deep-rooted skepticism as to the real need of their official existence. Because from year to year they do nothing, they take the unjust inference that there has been nothing to do, which is equivalent to saying that the towns over which they have sanitary supervision are now and have been for many years in such excellent hygienic condition as to be incapable of being improved. Another fallacy, closely related to the last, is the idea that a local Board of Health should be a passive rather than an active organization; that of its own volition it should never take cognizance of any unsanitary condition; that a Town Board should occupy the dignified position of a court of appeals, and take no action, whatever may endanger the public health, until the threatened danger is brought to its attention by other parties."

And it must be remembered that this picture is drawn of men who fail to do their common ordinary duty and does not refer to the schools, which almost as by common consent they wholly neglect.

Every argument that is good for sanitary laws for the factories of the State applies with equal force to the schools. The State in its wisdom four years ago enacted laws relating to the factories, and factory inspection. The same law, mutatis mutandis, would be a good one for the schools. Its short trial has demonstrated its necessity and can point to much good already accomplished. The report for 1890 shows that seven hundred and ten changes were ordered and that most of these orders were fully complied with. Many of these defects were found among the best managed factories in the State.

Massachusetts, the State which is now acknowledged to have the best schools in this country, one hundred years ago fully recognized in her State constitution the importance of State legislation and control of her schools. She has had a factory law, and since 1888 a sanitary law for the schools. The factory law has been a little longer in operation and shows more definite results. We subjoin the School Law of that State.

SECTION 1. Every public building and every schoolhouse shall be kept in a cleanly state and free from effluvia arising from any drain, privy, or other nuisance, and shall be provided with a sufficient number of proper water-closets, earth closets or privies for the reasonable use of the person admitted to such public building or of the pupils attending such school-house.

SEC. 2. Every public building and every school-house shall be ventilated in such a proper manner that the air shall not become so exhausted as to be injurious to the health of the persons present therein. The provisions of this section and the preceding section shall be enforced by the inspection department of the district police force.

SEC. 3. Whenever it shall appear to an inspector of factories and public buildings that further or different sanitary provisions or means of ventilation are required in any public building or school-house in order to conform to the requirements of this act and that the same can be provided without incurring unreasonable expense, such inspector may issue a written order to the proper person or authority directing such sanitary provisions or means of ventilation to be provided, and they shall thereupon be provided in accordance with such order by the public authority, corporation or person having charge of, owning or leasing such public building or schoolhouse.

SEC. 4. Any school committee, public officer, corporation or person neglecting for four weeks after the receipt of an order from an inspector, as provided in the preceding section, to provide the sanitary provisions or means of ventilation required thereby shall be punished by fine not exceeding one hundred dollars.

SEC. 5. The expression "public building" used in this act means any building or premises used as a place of public entertainment, instruction, resort or assemblage. The expression "school-house" means any building or premises in which public or private instruction is afforded to not less than ten pupils at one time.

A comparison in Essex county of the factories and schools shows that the former affords eight times more cubic space per person than the schools, and had on the average only eight parts by volume of carbonic acid to twenty-one parts in the schools. These facts for the factory are cheering but for school sanitation disheartening. But the working of the Massachusetts school law, which was fiercely opposed at first, is now meeting with great favor, and will work changes in the schools that would not have been otherwise effected.

Connecticut is behind, but she has in operation the factory laws, and begins to note beneficial results. In this she has legislated for better ventilation, for good sanitary conditions of water-closets, fire-escapes, and many other things, and holds the person or corporation at fault responsible for all damage, besides a fine of not less than $50 nor more than $500. This is a statute law for the health and safety of operatives in the factories of this State. But why do the 135,000 operatives in the factories of the State need legislative protection more than the 161,241 children in our schools? The former are mostly of an adult age and capable of looking out for themselves, the latter are generally dependent and helpless, and to-day probably the school-houses, like those in Massachusetts, are not in as good a sanitary condition as the factories.

INSPECTION.

We have seen that when an inspection has been made, results have shown that it was needed, judging from the defects brought to light. But a thorough inspection, which is to go into all the details and to be a matter of record, must include

the good as well as the bad features of the school. Such a registration is made up of constructive details, working functions and the septic or aseptic conditions of the schools. This registration must be complemented by a complete health record of each day, which the school register can give. If scholars have ailments or are at home sick, the register will note the fact and their disease, so far as can be ascertained.

When these inspections and records have found their way to the central bureau they can be classified and compared, and it will be possible to determine where the defects are to be found, their nature and the best way of removing them; what diseases have prevailed, their causes and the prevention suggested. Such results can be tabulated, and will be of service in future comparisons.

The power of an inspection for good is very great. I have known the sickness in a school district first to have awakened suspicion of the school-house, which led to an inspection, and this to a warm discussion as to repairing or building. The first feeling was to repair, but as the facts of the inspection were canvassed, the outcome was a new school-house costing $100,000. This grew out of an inspection.

We may call attention to the report made two years ago by the State Board of Education in one of the counties of this State. Probably the schools in that county were in no way different from those of any other county in the State, no better nor worse, and yet, so shameful was the condition found, so damaging the reports, that some threats were even heard in other counties if the work of inspection went any further. There is at first a feeling of repugnance to inspection, growing out of a suspicion of espionage or of meddlesome interference. But when it is known that the examination is in the hands of skilful and expert men, done legally and followed by good results, the prejudice soon yields. So in the examination made by the Board just alluded to, threats gave place to invitations to have the work done. Great good has resulted from that examination of a single county, though it was made along the educational rather than the sanitary lines.

It has always been a difficult problem how to conduct a school in reference to the infectious and contagious diseases. These diseases are practically narrowed down to the two diseases, scarlet fever and diphtheria. But if the prevailing type of measles is malignant, it will be put into the same category for management. Towns exercising ordinary care for their schools require notification, isolation and perhaps disinfection. If this were thoroughly done, these diseases would be to a great extent diminished. But it is not practiced over most of the State. Not long since, the largest city of this State made its difficulties in this matter public as follows: The committee on schools sent a letter to the Board of Health, calling attention to the prevalence of contagious diseases in various parts of the city. In this letter they say "that the authorities show inexcusable laxity, and that they can cite instances that would indicate criminal negligence on the part of some physicians in the city. "The committee has evidence that there have been cases of scarlet fever where not only was no notice sent to the schools, but the death certificate was the first notice the health office received. Also that school children have been allowed to view the remains of children who have died of diphtheria. The President of the Board of Health said that some physicians were very neglectful, and one or two had been notified that, failing amendment, they would be brought before the courts. He also adds: "Scarlet fever has been propagated in several wards through the negligence of some of our physicians. Public funerals have been held, and no attempt has been made to guard against the spread of the disease. Some one was culpable, and it was the attending physician. A case in point came under my own observation only a short time ago. I learned," says he, "that a wake was to be held over a person who had died of diphtheria. I immediately notified the family of the true character of the disease. They were surprised, as the physician had not notified them that it was contagious. It is not only the young physicians who are negligent, but the old ones as well." Now the health officer says: "The only evidence we get of some cases of contagious diseases is the death certificate. In nearly all of the schools the principals and teachers know of the existence of contagious diseases. We have no way of preventing children from attending a funeral. I know of the case to which reference is made in the letter. I visited the place an hour and a half after the death. The parents promised not to allow anyone to see the remains. It seems that children did, however, and there is no help for it. Many principals, in their eagerness to have their schools make a good showing, allow children to return to the schools before it is safe for them to do so. I have heard of a number of cases where children who have been ill with scarlet fever have been allowed to come back to school before they were through desquamating."

It is seen that the school committee blames the authorities and the physicians, the President of the Board of Health blames the physician, and the Health Officer finds the principals of the schools and the parents at fault. But the moral of it all is, that the rule of notification and isolation is practically worthless.

But with notification, isolation and disinfection there must be more inspection—reasonable in kind and amount. Dr. Seibert, of New York, goes so far, in an article on the prevention of diphtheria and scarlatina, as to recommend that

the throats of all school children be examined every day by a physician, using the child's finger for a tongue depressor. It would require for New York City 300 examiners. Such inspection seems at least special and expensive. But New York has about 2,000 cases of diphtheria annually, and the same of scarlet fever, which means about 30,000 cases of sickness from both diseases, at a cost to the city, directly and indirectly, of millions of dollars. Such an inspection would cost New York $300,000 annually. It might save hundreds of lives and a great amount of money. The inspection proposed for our schools would not be expensive, and would prevent these diseases at almost every point. It would travel on the lines that no foci or medium of contagion should exist, which is better than to be obliged to note their outbreak.

Many foolish customs and habits which now prevail would be set aside, as for example, we saw within a few years the children, clean and unclean, of a primary school, on leaving the room give the teacher a kiss. Now, suppose the first child was coming down with scarlet fever or diphtheria. No one can tell how many lives would be endangered. Good inspection would also keep out the filthy garments that find their way to the school room loaded with diseased germs. The clothes of the poorest child may be worn and patched, but they can and must be clean.

It has been seen that the carrying out of local health matters is largely a failure. The local or district management of schools is but little better, and the history of the Connecticut schools shows that one hundred years ago when the towns relinquished their control to the districts it was a grave mistake. With this experience the matter of the health of the school cannot be left either to the local board of health or to the district, for in such circumscribed localities the requisite talent and fitness is scarcely to be found and unless the law defined the duties of each, as it does in New Jersey, there would be constant clashing between them. This work must be entrusted to skilled men, independent of local prejudices and influences, and to men competent in school matters and of a character to entitle them to consideration. It could be entrusted to either the State Board of Education or of Health, as is the case in New York and New Jersey. But our State Board having such a bureau in charge, would require the services of hygienic experts. The State Board of Health could not depend upon the health boards of towns. Massachusetts has a special bureau called the District Police, which seems to give satisfaction.

We would not be understood as disparaging the work or the influence of our present State Board of Education. They are working along the educational lines and doing all that the law permits them to do. They have a secretary who devotes his time to ascertaining the condition of the schools, enforcing the truant laws, superintending the State Normal Schools, attending conventions, and making annual reports. All this is promotive of great good, but as now constituted, without any sanitary or medical men on the board, it would be inadequate in the very nature of things to superintend the health department of the schools.

INSTRUCTION.

No sanitary laws or system of inspection can be enacted that stands in any degree above the public sentiment of the State. To elevate public opinion is a part of the work to be done by the friends of our schools. Science and sanitary measures must be better understood in the community. They should form a part of the school curriculum. The graduates of our normal schools should be fully taught on the whole subject. They should know a good and a bad school house at sight, and be able to give a critical opinion, to measure the pupil in his organization, his growth, development, temperament and capacity.

Hygiene has of late been introduced as an optional study in the schools. An outline text book or syllabus has been adopted. This is inadequate. A full text book, well illustrated, is needed to insure success. Something might be done with the advanced scholars in selective reading from the current health literature. Whatever knowledge is gained in these matters in the school will be known and discussed at home. Teachers and schools need for a time special instructors to look after this branch of study in towns and larger districts until the subject is more fully introduced.

I have, gentlemen, for the purpose of illustration, given some facts concerning the sanitary condition of our schools; the amount of sickness or physical impairment which an inspection here and there reveals; the phenomenal absence of all sanitary legislation and the great need that exists for skilful and thorough sanitary inspection and supervision.

I could not have made these suggestions to any class of men more ready to appreciate the conditions indicated. It is to be presumed that some of you are officially connected with the schools, but if not, the observations made in your professional lifetime will have disclosed to you more facts than can be related in one brief hour.

It has been said that the Connecticut school has relatively declined. It may be that in the great success, in the glorious tradition of the early schools of the State, we have relied too much upon our inherited advantages, or been too conservative in the adoption of the new methods

of study and management, successful in other States. But our discussion confines us to the lines of health. We presume that in the first schools planted here in the wilderness, though they were under the supervision of such illustrious men as Davenport, Mason, Hopkins, Hooker and Eaton, some of whom had studied the free schools in their exile home in Holland, the matter of school sanitation had never been discussed. Neither did the pilgrims on board the Mayflower discuss the question of putting a steam engine into that little ship. Sanitation is a word of this generation, and already is not fully expressive of the most advanced ideas in this direction. The hygienic watchword to-day in Europe, more than in this country, is asepsis. It is this that is cleaning the streets of the continent. It is reducing the death rate of cities, and bids defiance to plague and pestilence, and our mission as physicians in this great work is not ended until we see this great principle, not only pervading and permeating our schools, but made authoritatively and permanently effectual. When this is done a long step forward has been taken in regaining the reputation and the glory of the Connecticut school.

ORIGINAL ARTICLES.

RESTORATION OF THE PELVIC STRUCTURES AFTER INJURY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May 5-8, 1891.

BY HENRY O. MARCY, M.D.,
OF BOSTON, MASS.

1. *The Cervical Lesions of the Uterus.*—Little is required to add to the completeness of our knowledge to the present date, upon the surgical treatment of lacerations of the cervix uteri. Thanks to the labors of our distinguished countrymen, the late Dr. Sims and his early associate, Dr. Emmet, of New York, the limitations and advisability of the surgical repair of the cervical tissues of the uterus are generally well understood and accepted by the profession at large, as taught in the great surgical centres of the world. The restoration of the cervical tissues after the proper refreshment is greatly facilitated by the use of the Hagerdon needle, which pierces accurately and with comparative ease the thick, firm cervical tissue. The interrupted silver wire suture, so long used by the followers of these great masters, has been most advantageously supplanted by the continuous animal suture, since this at least equally well holds the restored parts *in situ* and demands from the surgeon no attention subsequent to the completion of the operation. This is, in every way, a great gain by allowing the parts to remain continuously at rest, saving the patient the anxiety and dread of suffering, consequent upon removal, and the surgeon oftentimes a delicate, troublesome manipulative operation in hunting after and removing the loop of wire. More important than all, however, it is a great gain in that the surgeon may at once proceed to the performance of other operations, if, as is generally the case, such are deemed necessary.

I suppose it need scarcely be added that the manipulative procedures, at least in the present state of our knowledge, are decidedly safer when performed in the most careful aseptic way, including irrigation with mercuric solutions. A vaginal tampon impregnated with iodoform completes the dressing.

2. *Operations on the Vaginal Roof.*—The first in importance, although not in frequency, of the lesions of the superior structures of the vagina, is vesico-vaginal fistula. Here, as elsewhere, we pause for a moment to consider the monumental labors of our great founder of gynecology. Without appreciating the first great cause of failure of sutures, as then applied, as due to septic infection, Dr. Sims accepted the metallic suture as a great gain over all material hitherto used, from the fact that it remained in the wound as an "unirritating" material. He demonstrated the better methods of repair, emphasized the primal importance of introducing the suture, so as not to include the mucous membrane, and worked out with painstaking care the methods of complete closure of the wound, and retention at rest of the coapted surfaces. His dexterity, skill and fertility of resources, are the admiration of all. In this operation, however, for some years, I have advocated the use of the continuous tendon suture, which I think preferable to wire for the reasons advanced in the consideration of its use in the repair of cervical lesions. The secret of success in the use of the tendon suture, is the same that pertains to Dr. Sim's operation, greatly aided, however, by our knowledge and appreciation of aseptic conditions, without which failure will ensue, no matter how carefully we obtain what Dr. Sims considered as the fundamental factors, retention at rest of the carefully approximated refreshened surfaces by the means of the "non-irritating metallic suture."

3. *Cystocele.*—The condition is not exceptional, where, for reasons already referred to, the anterior wall of the vagina has become so deformed that it produces a protruding pouch which contains the base of the bladder descending on a plane below that of the orifice of the meatus. Fortunately for the surgeon, the conditions here are quite unlike those which pertain to the posterior segment of the vagina in rectocele. Owing to the more or less constant effort in micturition, and other causes, the vagina, although weakened as a means of support, has become greatly thick-

ened anteriorly and its vascularization increased. The surgeon having determined upon a reformation of the vaginal tract, after having duly cleansed the parts, marks out the portion which he intends to resect. The size and shape of the piece to be removed will, of course, depend upon the conditions present. It may be a simple ellipse, or a portion upon either side near the cervix in addition may be deemed wise to be removed, possibly including the entire cervix, in certain cases of hypertrophy of the organ. Few plastic operations are attempted with more dread by the inexperienced, owing to the fear of wounding the bladder. It was on account of this that most of the early operations, where the attempt was made to pare off with the scissors the mucous membrane only, and intrafold the vaginal muscle, resulted in failure. The method of operation is really simple. At the commencement of the prolapse, above the urethra, a division is made entirely through the vaginal muscle to which the bladder is loosely connected. With a little care, by means of scissors, a desired resection is made, the loose connective attachment to the bladder making the separation easy. When in doubt, it is well to minimize the piece removed and adjust the edges the better to determine the effect, since it is easy to pare away the redundant tissue afterward, if necessary. We cannot help thinking that the following method of suturing is to be recommended over that generally in use. By means of a fully curved Hagerdon needle, introduce aseptically the animal suture, preferably tendon, in the following manner. It is presumed that the operation thus far has been done in the lithotomy position, the parts having been fully exposed, by the use of the retractor speculæ. The continuous stream of the irrigator washing the parts clean, the bladder wall is elevated by some flat instrument, and the suture is introduced, commencing at the cervical portion of the wound, from a quarter to a third of an inch away from the cut surface of the vagina, from side to side, in a continuous running or lacing stitch, thus completely approximating and supporting the divided edges of the vaginal wall by a line of buried sutures; the last stitch is carried entirely through the vaginal wall, at some distance from the meatus in front, away from the cut surface. A second line of sutures is carried from within outward, through the deeper portion of the vaginal wall, parallel to the first line, closely uniting the divided edges, and yet none of the stitches penetrating through the mucous membrane, thus making a second line of buried sutures. Finally the suture is made to emerge very closely to the exit of the first, where the two are joined by a knot and the ends cut short. The vaginal wall is now very carefully dried, dusted with iodoform, painted over with iodoform collodium, into which a very few fibres of cotton are introduced, and a dry tampon of iodoform wool is applied within the vagina. This method of uniting the refreshened parts in vesico-vaginal fistula is sometimes advised, where the wound is sufficiently large to allow of the union of the tissues by burying the sutures in their different layers. In both cases, a retaining catheter should allow the free escape of the urine in order that the approximated tissues may remain at rest. A rare form of injury to the parturient tract has been pointed out by Dr. Emmet, of New York, of which I have seen but a single complete example, although, I believe in a minor degree, it not very unfrequently is associated with lesions of the perineum. It consists of a more or less complete tearing away of the vagina from the connective tissue attachments to the surrounding organs, by its becoming folded over, or fixed, so to speak, to the advancing head in parturition. It is important to bear in mind the possibility of this lesion, of which the following case is an exceptional example. Mrs. M., aged 28, otherwise healthy, was sent to my hospital in 1889, under the supposition that she was developing cancer of the vagina. Her history, briefly, was that about 18 months previously, after a long and tedious labor, the first pregnancy, she was delivered of a still born child; convalescence was tedious and imperfect, with much local pain and discomfort continuing to the present. There was a moderate laceration of the perineum, but just within the vulva there was a firm, hard, inelastic ring, which barely admitted the tip of the index finger. Upon dissection it proved to be cicatricial, consisting of a fold of the vaginal muscle, which extended upon either side nearly to the meatus. Restoration of the parts was effected by dissecting, entirely free from its attachments, a little more than three quarters of the vagina quite deeply in its junction to the vulva. The perineal structures were now restored and the vaginal tissues normally rejoined to the vulvar outlet. A rapid convalescence followed with entire relief to the patient and complete restoration of the parts.

4. *Repair of Lacerations of Perineum.*—When incomplete the floor of the pelvis presents a great variety of changes, dependent upon the degree to which its structures have been weakened. When the sphincter fibres remain uninjured, the transversi having been separated, and by their perverted action the levator loop is drawn apart, a more or less pronounced rectocele is usually present. Obviously the chief factor in importance is to restore the relation of the groupings of the sundered muscles which go to make up the pelvic floor. A careful examination of the anatomical relation of these structures will make apparent that the injury sustained by the parts is *posterior* to the vagina, and hence, whatever operative measures we would undertake for their restoration, should include the parts in-

volved. Upon reflection, it is clear to all that this is not the vagina, and yet, singularly, nearly all surgeons content themselves by operating upon the vagina after denuding it of its *mucous surface* only. It is true the vagina is deformed, oftentimes stretched out to a thin muscular coat, the rugous surface of its mucous membrane entirely wanting, and yet nearly every operator classed as an author, has dwelt at great length upon the importance of denuding its mucous surface only with the greatest care, and then intra-folding its muscular wall with stitches taken in every variety of manner, and combination of lines, confusing in detail and grading into each other in kaleidoscopic pattern. It is owing to this, in by far the larger measure, that such confusing and uncertain ideas pertain to the profession generally, which makes the repair of the perineum, as usually practiced, one of the most unsatisfactory of operations in surgery. If it be true that the *structures* that go to make up the pelvic floor, and not the vagina, are the ones at fault, then it is equally clear that these are the tissues which merit and should receive our attention. It is not for a moment to be doubted, that most operators have, in a measure, included these structures in their operations upon the denuded vaginal muscle, but at the best this is accidental, faulty, and liable to failure, as we have seen in a similar operation when undertaken for cystocele. I cannot doubt that the true rationâle of operative procedures and consequent satisfactory result should be based upon making the dissection *behind* the vaginal muscle and not *upon it*. The procedure is simple and easy.

In incomplete ruptures, with more or less prolapse, the transversus perinei muscle can no longer be felt as a band in front of the rectum, and the levator has lost its tonicity. The restoration of these with the various attachments of the sundered groups is the object sought. The patient is placed in a good light in the lithotomy position upon the table. An inflated rubber irrigating pan with a large efferent tube is placed under the hips. This is a great convenience for purposes of cleanliness. These were first made for me more than ten years ago by the Davidson Rubber Co. Somewhat recently, with slight modification, they have been introduced to the profession as the Kelly pad. The irrigation with a 1-2,000 mercurii bichloride solution is under the direction of an assistant and the entire operation is conducted with aseptic care. After the sphincter has been stretched and the lower bowel cleanly washed, introduce two fingers of the left hand into the rectum, which are not withdrawn until the operation is completed. The posterior third of the vagina is separated with knife or scissors from its vulvar attachments. The recto-vaginal space is easily found and the dissection is carried as far up as the crest of the rectocele and into the lateral sulci, as far as is deemed sufficient. Their lateral sulci are formed by the retraction of the ends of the transversus perinei muscles, and it is important to dissect well beneath them and free their divided ends, for the reunion of these important structures is dependent upon the ability of the operator to seize upon and firmly hold them in the grasp of his sutures, thus rejoining them upon the median line. Dr. Emmet has very wisely pointed out the importance of taking up the "slack" of these vaginal tissues by his Y lines of suturing, but to my mind has failed to emphasize the pathological conditions and the causes which have produced them.

The separated flap is lifted and held by an assistant, then I introduce a large curved needle, with the eye near the point, threaded with tendon, from right to left, deeply from side to side, beginning at the very base of the dissection, guiding the needle by the finger in the rectum, so as not to puncture it. The suture is unthreaded, the opposite end introduced into the eye and the needle withdrawn. The suturing is continued in this way until the required number of stitches are taken. In rectocele with prolapse and large, deep sulci, the buried sutures are more deeply taken laterally and internally from side to side, in order to join the separated fibres of the levator loop with the retracted, transverse perineal muscle. Usually four or five of the double sutures are required; they are secured by a knot and the ends cut short. The remaining tissues are coapted by a light running suture taken from side to side until all the structures are joined. It is frequently wise to remove a small portion of the redundant, deformed, vaginal tissue, and the coaptation is completed, every stitch being taken so that the suture is not in sight, all remaining completely buried. The parts are carefully dried, dusted with iodoform and covered with a very thin layer of iodoform collodium strengthened with a few fibres of cotton. When the dissection has been properly made, the tissues thus coapted form a firm, full deep perineum. The finger introduced into the vagina recognizes at once the tense reconstructed pelvic floor. With proper dexterity the vulvar organs are reformed to the condition of those of the woman who has never borne children, and when the reunion is primal, which should follow the operation if done aseptically, the convalescence is rapid, without pain or œdema of the parts. It is well to cause defecation not later than the third day; micturition in the knee-chest position may be voluntary, but great care should be exercised to prevent the wetting of the restored tissues with urine. No especial restraint of body is required; a semi-reclining position may be assumed within a few days and the patient allowed to sit up for short periods of time

after the first week. Beyond the careful attention to retain the parts aseptic no subsequent dressing is needed. This, in my hands, has been best effected by keeping the parts dry, by the occasional change of the vaginal dressing, and frequent dusting with the iodoform blower. After some months it is often difficult to trace the line of reunion even under careful examination. I have somewhat recently had the opportunity of examining a patient, where I restored the perineum more than nineteen years since with perfect result, and during the subsequent years of my surgical experience, after a great variety of modification in detail, I have found the above method, all too briefly described, eminently satisfactory. My experience comprises several hundred cases thus operated upon, and it is the very decided exception that failure in any degree results. If for any reason failure ensues, the tissues are in better condition for subsequent operation than by any of the surgical measures usually recommended, since little or no tissue has been removed, all having been utilized in the restoration of the parts.

Operative measures advised when the rupture is complete do not differ materially in principle from those advocated in incomplete rupture. Here, for apparent reason, rectocele is absent, and the hæmorrhoidal venous plexus does not undergo deformation. The edges of the laceration are slightly refreshened, and the vagina from each side of the rent is dissected away as far as may be deemed necessary; usually, as already recommended, to include about the posterior third. The dissection is continued posteriorly on each side of the sphincter ani, in order to be able to reach the retracted ends of the torn sphincter muscle. The lower border of the rectum is reformed by a line of continuous tendon suturing, commencing a little above the rent, in the line of the dissection which has been made between the vagina and the rectum. The stitches are taken from side to side, laterally, within the margin of the refreshed tissue, and the suturing is continued quite to the reformed anal outlet, the end of the suture being left unsecured until a later stage of the operation. It will be noted that this running, or lacing suture, when drawn upon, is entirely buried within the refreshened tissue, while it everts the coapted mucous membrane of the bowel toward the rectal side. A similar line of suturing coapts and restores the vagina. The uncut end of the suture serves conveniently the purpose of lifting upward the vagina by the assistant during the process of coapting the several structures, which is done precisely as recommended in the reconstruction of the parts in cases of incomplete rupture. The double suture is applied deeply on either side of the sphincter, in order to coapt the retracted ends of this muscle. In the failure to do this, a weak sphincter will frequently be the result, even if complete success has attended the restoration of the other structures. Preliminary to the operation, it is important to have the lower bowel well emptied, thoroughly cleansed by injection of sublimate solution, and a considerable ball of iodoform wool, with string attached for subsequent withdrawal, should be introduced high up into the rectum. The bowel is better moved by the fourth day, and a rectal tube may be inserted as early as the patient seems disturbed by flatus. By this process of restoration, the so-called pin-hole or recto-vaginal fistula can very rarely occur; in fact, I have never seen it to happen, although so commonly resulting by the methods usually advised. Success of course depends upon doing the operation under aseptic conditions, and retaining the parts devoid of infection during the processes of repair. I have frequently seen this most troublesome affection cured, as completely as when undertaken for the simplest of lesions.

I cannot help thinking that the measures above described are to be earnestly commended as simple, safe and effective; but they must be executed with the most rigid aseptic precautions, without which failure will not only ensue, but the gravest dangers, not alone to the parts involved, but to the life of the patient, may readily follow.

The pathological conditions which pertain to the rectal tissues result, in very large degree, from changes in the vascularization dependent upon the dilation of the hæmorrhoidal veins. These are often deformed to an extent rarely appreciated by the ordinary practitioner, and only to be understood by the surgeon, who makes the vivisection for the purposes of cure. I have elsewhere treated this subject in detail, and refer to it here for the purpose of completing the subject of plastic operations for the restoration of the pelvic structures in women, resultant upon pathological conditions. I am constrained to believe, as I think for abundant reason, that the ligature and cautery, destruction of the tissues by acid, etc., are not alone unsurgical and barbarous, but often fail in the end of securing the desired result, since a portion of the deformed structures, not seldom, remains unchanged, but also that tissues, of importance to preserve, are thereby frequently destroyed. A complete dissection of the deformed hæmorrhoidal plexus, as advocated by Mr. Whitehead, in my judgment, offers abundant reason for adoption, and the only criticism I have to make upon his method, is the closure of the wound with interrupted silk sutures. This method has been severely criticised and in great measure failed of general adoption, because of the fear of hæmorrhage, which during the indefinite past has been emphasized as liable to pertain to any of the methods applicable to the cure of hæmorrhoids. This is doubtless greatly overestimated by the profession at large. The dilatation of the

hæmorrhoidal plexus is, indeed, sometimes truly enormous, but it will be found, upon dissection, that the vessels quite within the grasp of the sphincter are usually very little changed, and that here their constriction is simple and easy. I have for some years operated in a way to be commended as in large measure bloodless, and assuredly without danger of subsequent hæmorrhage. The procedures are briefly as follows: The sphincter muscle is dilated and the parts put on tension by two fingers in the rectum. Either with a sharp knife or scissors, division is made upon the line of the juncture of the skin and mucous membrane. With a little care, the veins are separated from the loose folds of connective tissue without injury, down to the line of the sphincter muscle. They will be found closely connected with the everted, thickened mucous membrane, a portion of which it is well to remove. Division should be made through it upon the line selected for excision, and a continuous row of double tendon sutures is rapidly made to encircle the base of the hæmorrhoidal plexus. It is then resected with scissors, and a light line of continued running sutures encloses the deeper layer, and when gently drawn upon, taken as advised, from within outward, are themselves buried, leaving no stitches in sight. Carefully dried and dusted with iodoform, the operation is completed by painting the line of closure with a layer of iodoform collodium. It is usually better that three or four days elapse before defecation ensues, after which there is little suffering. With the paralyzed muscle at rest, the conditions of the parts remaining aseptic, pain and œdema are almost entirely wanting, and the contrast between the suffering, and too often defective result, pertaining to the measures usually in vogue, is so marked, that I cannot help thinking that he who gives this operation a careful trial, will abandon all others for the cure of hæmorrhoids.

To resume, it will be seen that the above group of operations are based upon a tripod of simple factors:

First—Clean dissection in aseptic tissues, aseptically maintained.

Secondly—The restoration of the parts to their normal relations, by means of animal sutures, preferredly tendon, aseptically buried, and the wounds protected from external contamination and infection, by the simplest possible methods of dressing.

Thirdly—Retention at rest.

The tissue, aseptically maintained and held at rest, for a few days only, take on repair without pain or suffering. The collodion seal is less satisfactory upon wounds of the mucous surfaces than upon the skin; however, it is surprising to note the rapid changes inductive to repair which go on in an aseptic wound, and to this end, external protection after a brief space of time is far less important than was earlier supposed. In the light of great principles, founded upon scientific data, of practical value for the well-being of our race, personal questions sink into insignificance and are deservedly worthy to be forgotten. However, I trust it will not seem presuming, in claiming for myself the merit which I know a generous profession is willing to grant to all scientific measures which are deemed worthy of approval. The use of the buried animal suture seems almost as a corollary in the problem of aseptic wound treatment, especially when we take into account that the great principles upon which its adoption is based were clearly demonstrated by the immortal founder of antiseptic surgery. Mr. Lister traced with pains-taking fidelity the changes which ensue upon the closure of a great vessel by the animal ligature when aseptically applied. Indeed, these changes, when the tissues chanced to be aseptic, had been as clearly pointed out, and the results demonstrated, in the early part of the present century, by American surgeons, whose work is now well nigh forgotten, although deserving of a permanent place in the history of surgery. Dr. Jamison, a distinguished surgeon of Baltimore, published a prize essay in 1827, replete with demonstrations upon the lower animals, in which he follows with rare acumen the changes which ensue in the ligation of vessels in continuity, by the animal ligature. The material employed was, for the most part, narrow strips of deer skin tanned after the methods in use by the American Indians. The skin when finished being soft and pliable, somewhat resembled the chamois skin of commerce, although a very much tougher and stronger product. Dr. McDowell, the founder of ovariotomy, used such a ligature for tying off the pedicle in his first case of ovariotomy. The celebrated surgeons, Drs. Physick and Dorsey of Philadelphia, Dr. Nathan Smith of New Haven, and others, including Sir Astley Cooper of London, made use of such ligatures cut short and enclosed within the wound, and wrote approvingly of the results. Governed, however, by the theories of irritative conditions, inflammation and vascular changes which occurred in the tissues, all obscured by the want of accurate knowledge of aseptic processes, the practical lesson which these men taught was lost to surgery until a better pathology demonstrated the now well-defined lesson of septic and aseptic conditions which pertain to wounds. Directly after having received personal instruction from Mr. Lister in 1870, I operated upon a case of hernia, where the abdominal opening was so very large it became necessary to close it in order to retain its contents; this I did, although with much misgiving, by the use of interrupted sutures of catgut closed within the tissues. The wound was dressed antiseptically and primary union followed, with a permanent resulting cure of the hernia.

The lesson taught bore fruitage in a series of histological studies upon sutures buried in the tissues of different animals, killed at varying periods, after the introduction of the suture. The material used was primarily catgut, and afterward tendon taken from a variety of animals. I demonstrated that, little by little, the suture became infiltrated with new connective tissue cells which, in a very considerable degree, not alone surrounded, but replaced the buried suture. The limit of this paper prevents further detail, except a brief reference to my publications upon the subject.

My first case of operating, already referred to, occurred in February, 1871, and my first publication was in the *Boston Med. and Surg. Journal*, November 16, the same year. I have repeatedly called the attention of the profession to this subject, in various articles published from time to time until the present. So far as I am aware, the priority of my publications upon the various uses of the buried suture has never been questioned in America, but in Germany, I understand, such honor has generally been accorded to Werth, whose first contribution upon the subject was in 1876, five years after my first publication upon the subject. Experience in the hands of many operators has now carefully demonstrated the wide applicability of the buried animal suture, covering the entire field of operative surgery when aseptically applied itself aseptic, in aseptic wounds. In such wounds, when the tissues are evenly coapted, drainage is no longer required, and any material left in the wound for the purpose, is not only superfluous, but positively detrimental and dangerous, since wounds thus closed, no matter how large, including even the major amputations, may be sealed with the germ-proof dressing, and all subsequent attention, beside retention at rest, is unnecessary.

POST-OPERATIVE PERITONITIS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, Washington, D. C., May 5, 1891.

BY BENJ. T. SHIMWELL, M.D.,

DEMONSTRATOR OF SURGERY MEDICO-CHIRURGICAL COLLEGE, PHILADELPHIA.

The object of this paper is to bring forward, for discussion, certain symptoms that follow after operations in the abdomen.

The value of proper drainage, in this class of work, is fully appreciated. Some operators being so enthusiastic as to enforce its use in almost every case. This enthusiasm deserves more commendation than condemnation.

The necessity that requires such means, is a result of the condition on which the title of this paper is based.

To properly understand the idea intended, there must be an appreciation of the distinctive difference between the two conditions, sapræmia and septicæmia. It is a state of sapræmia due to the absorption of a chemical product into the system.

The tendency of an injury to any closed serous cavity, is to result in an inflammation which will diffuse itself over its whole surface, unless there is contact and adhesions formed which limit its extent. It is this peculiarity that accounts for peritonitis following operations.

This is an asthenic inflammation. The difference between this and the sthenic is in the character of the exudation. This is explainable on the theory that there is alteration of the functional activity of the peritoneum, produced by the interference, resulting in the engorgement of the vessels and transudation of the serous contents. It is an inflammation which does not go beyond the first stage and its serous exudation. If it was to pass into the second, then we would have fibrin and cell elements present, forming adhesions constituting what the pathologists call the chronic stage.

The existence of a pure serous exudation is doubted by pathologists generally. They admit it does, but claim it contains fibrin in more or less quantity. If it is present it must be in its primary elements.

The seriousness of this effusion is entirely governed by the quantity: when slight, the peritoneal surface is able to remove it; if greater, then positive means must be used or death will occur.

The presence of this fluid is caused by involvement of the whole peritoneal surface.

The limitation of this condition is governed by the recuperative powers of the individual, and the influence the operation has on the system at large.

It is a congestion, with consequent exudation, due to paresis of the vessels. The development of germs is the secondary involvement, and on this depends the result.

We know that the peritoneal surface is able to take care of pyogenic organisms, providing the condition is such that their absorption may take place. Yet an abnormal state of this membrane or an abrasion may be sufficient to allow of their full development. Experiments have proved that saprophytic bacteria can be absorbed in large quantities, yet, if there is an interference in the functional activity of the peritoneum or the exudation be so increased as to interfere with rapid absorption, then sapræmia will occur. There will not be suppuration in these cases. This is a point in the argument. In this form of peritonitis absorption does take place, more or less rapidly at first, then extension of the condition interferes with the action of the lymphatics, and consequently there is partial stasis. This state being present, the pyogenic organisms existing develop and rapid intoxication results.

Retained blood clot, shreds of tissue, imperfect

coaptation and the exudation from denuded surfaces furnish means for the development of microorganisms independent of any other condition. The effusion with development of germs, that is incited by the presence of these foreign substances, give rise to a state that is not of the character dealt with by this paper. It is septicæmia, not sapræmia.

To account for the presence of these microörganisms is not my object. Whether they are introduced from without, excreted from the blood or derived from the intestinal canal, is an open question.

It is not scientific to say, because plasma and adhesions are not present, that this condition is not peritonitis; sufficient to the fact is the existence of this serous exudate.

We cannot overlook the fact of the localized peritonitis created by the interference, which exists in every case operated upon. No one will deny the fact that exudation takes place and that the absorptive power of the peritoneum is brought into play or relief is sought in the drainage tube.

I have had, in my experimental work on the dog, serous exudation occur after operations. The quantity varied in extent. Post-mortems would show the intestines congested and free of plasma. Mesentery always shortened. The point of operation showing plastic exudation, there being either good union or secondary softening of the exudate.

Pus was never present at any place in the abdomen but at the point of operation. It is therefore proof that the exudation was free from fibrin; for if not suppuration would have been more diffused. As fibrin and cell elements are necessary for suppurative change, it can readily be understood why this condition does not exist. If the exudation is thrown out on the serous surfaces there may be sufficient plasticity to maintain their contact, and fibrinous union occur. This is possible if there is modification of the conditions with absorption of the fluid, but if this persists the fibrinous network gives way. The effused leucocytes become fatty, degenerate, and suppuration follows.

How often have post-mortems shown the place of operation covered by adhesions, and yet a serous exudation in the pelvic cavity.

Why two operations will give diametrical results, when done under the same conditions, is difficult to explain.

Why a simple oöphorectomy will end fatally, and another, followed by necrosis of the stump and suppuration, terminate with discharge of ligature and recovery, is more easily explained. In one, necrosis has not occurred and inflammation extends according to the law of serous cavities. The other has necrosed, adhesions form, limitation of inflammation takes place and suppuration occurs.

The classical symptoms as recognized in peritonitis are absent, or modified, when present, and on these grounds do cases deceive.

A close observation of cases that have come under the writer's care, has convinced him of the existence of certain facts that are more or less constant. One of the most prominent symptoms of so-called idiopathic peritonitis is pain.

In post-operative peritonitis this symptom can truly be said not to exist. If present, it is very slight and is generally localized, being due to existing adhesions. It is apt to escape attention unless careful palpation of the abdomen is made.

Tympany exists in an exceedingly mild form. In some cases it is not apparent. This is in part due to contraction of the mysentery which holds the intestines close to the posterior wall. I have seen the liver dulness over two inches above its normal position by distensions of the transverse colon, and yet the abdominal wall was flaccid.

The temperature sheet, in the average case of this kind, shows nothing characteristic. Constancy is not present. Rise and fall making no change in the general condition. A gradual fall from 103° to 99° has neither cleared the cloudy sapræmic brain nor lessened restlessness. The rise again at unsuitable hours has not increased, nor changed the existing condition.

In these cases post-mortem shows nothing resembling the idiopathic form. Here, effusion of bloody serum is present, in variable quantities, situated in the pelvis, located there by gravity. Adhesions are not present, except localized by Nature's attempt to limit. There is not the diffused matted or attached intestines.

There is one sign in the diagnosis that I think is conclusive in forming an opinion. I have found it present in all forms of peritonitis. The so-called idiopathic, tuberculous and post-operative. It is the absence of Douglas' cul-de-sac as felt through the rectum. Every one who has examined many rectums knows, that when the finger is introduced to the anterior, that after passing beyond the internal sphincter there is felt a mass that has the sensation as if the rectal walls had prolapsed; this is always pushed aside and the continuation of the canal is followed. This mass is made by Douglas' cul-de-sac, which pushes the rectal wall downwards. If the rectum is examined, in a case of peritonitis, this mass will not be present; instead, the finger will turn about in space and have to be introduced farther into the bowel; in some cases pushing the anal surface upwards to reach the roof made by the floor of the sac. This is most marked in the male. I have been unable to feel the floor of the sac even when the abdomen was full of fluid and the belly walls excessively distended. This is due to the contraction of the mesentery, which draws up the rectum, obliterating in whole or part, the recto-uterine or recto-vesical space.

A REPORT OF THREE SUPRA-VAGINAL HYSTERECTOMIES AND SIMILAR CASES TREATED BY ELECTROLYSIS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY THOMAS OPIE, M. D.,
OF BALTIMORE, MD.

Mrs. L., age 48, was married at 28. Menstruation began at 16. This function continued regularly, painlessly, normally, throughout her unmarried life and during her married life until six months ago, when she began to menstruate on alternate months. She never conceived during her 22 years of married life, though her husband was a healthy man and both enjoyed to the fullest extent the conditions of sexual union.

Five years ago, she first noticed an enlargement of the abdomen; she observed that she was "short-waisted." Pressure symptoms manifested themselves in disturbances of the digestive system two years ago and were her only annoyance, save the mortification growing out of her abdominal development.

There has been no vesical nor renal disturbance, at least so far as the patient remembers, because, like the uterus of advanced pregnancy, it has for five or six years been an occupant of the abdominal cavity.

The lady on her first visit to my office stated that she had been examined and an opinion obtained that she had an ovarian cystoma, but her friends were unalterably opposed to operative procedure.

The conditions of fluid contents were satisfactorily made out, but my indecision as to its exact character was manifested by my double equipment for the operation either as an ovarionomy or a hysterectomy.

After thorough aseptic, indeed absolute antiseptic preparation of the patient, operator and assistants, an incision was made from the ensiform cartilage to the symphysis pubis, a distance of 14 inches. The tumor was brought forward through the incision and Baker-Brown's clamp supplemented by two Koeberle scissors clamps were made to constrict the pedicle, which was the uterine neck. Despite this precaution hæmorrhage ensued, but was promptly arrested by seizing the vessels with artery forceps, ligaturing them and tying the pedicle in three sections, the middle one by the saddler's stitch.

The tumor weighed over 20 pounds, its antero-posterior circumference measured 23½ inches, and its transverse circumference 22¾ inches. Its shape, lying upon the table, might be simulated by a bladder in the same position, three-fourths distended by water. The diameter from the pedicle to the fundus was 13 inches, the transverse diameter 12 inches and the vertical diameter 9½ inches. The intra-vaginal portion of the cervix was not enlarged, the body of the fundus apparently monopolized all the pathological elements.

The general outline of the tumor was the smooth hypertrophied and symmetrical appearance of the uterus of advanced pregnancy, in strong contrast with the irregular and nodular characteristics of the typical fibroid. The ovaries are both intact in the specimen and are located near the section of the stump, equi-distant from it and exactly opposite each other. There were absolutely no adhesive bands or other evidences of there having been at any time inflammatory trouble.

The microscope showed a large preponderance of fibrous tissue and that the numerous dilated lymph spaces were filled with fibrin. The fluid contents of the tumor coagulated immediately after its removal.

In pregnancy the development of the uterus out of the pelvis into the abdominal cavity, so as to make the woman "short-waisted," would take at least four and a half months. In a measure there is a parallelism between the normal and this so-called abnormal growth, since both are nutritive in their character, the one in the main muscular, and rapid, the other fibrous and slow. It is set forth in the history of this case that since it began its abdominal development, five years have elapsed and it had now attained the size of the uterus at full term. In view of the law of uterine development, we might assume that this fibroma had an intra-pelvic existence of at least five years, and therefore the whole period of growth was at least ten years.

The early stage of the tumor was even more mysterious and inscrutible, than the early stages of pregnancy. The patient informs us that her first and only intimation of her condition was, that she was getting "short-waisted."

A pertinent and practical question is, when did this cystic degeneration begin and what is its significance as bearing on the health and longevity of the patient?

The temperature has never risen since the day of operation above 99°, nor the pulse over 78. The Koeberle clamps, were removed on the second day, and the Baker-Brown clamp on the tenth day. The silk-worm-gut sutures with which the abdomen was closed, were removed on the twelfth day. The whole extent of the wound has been sealed by primary union, except the lower end of the incision corresponding with the stump of the pedicle which granulated healthily, the abdominal peritoneum being securely united to the peritoneum of the pedicle. I may say, at the time of this writing, the twelfth day, that with a sensible and manageable patient like the one in question, there is but one possible danger ahead, and of that we stand forewarned, viz.: ventral hernia.

Two years ago I met with a similar case of fibro-cystic myoma and operated at a private house with the same fortunate results as in the case just described. The lady recovered without a single untoward symptom and is now plying an active and successful mercantile business.

My third case of hysterectomy for a fibro-cystic myoma was performed 18 months since at a private residence. This patient died on the 6th day. While I cannot state positively the cause of death, since a post-mortem was refused, my belief is, she died from sepsis.

The length of the incisions in the last two cases referred to was about 12 inches and weight of each over 15 lbs.

The mode of operating in these cases is in dispute, though Keith, the most successful of all hysterectomists, advocates the extra-peritoneal plan, as do Pean, Hegar and Bantock, while Schroeder, Billroth and Koeberle, the author of the "serre nœud," practice the intra-peritoneal method.

It is not likely that any one will contend that ergot, administered by mouth or hypodermically, would in any wise curtail growths like the specimen I have described. The removal of the appendices would, if it was practicable in such huge growths, have but little if any influence. I have for two years past used electricity hopefully and for some time enthusiastically, in fibroids of all kinds.

The intra-uterine electrode, as well as the method of stabbing the tumor with the sharp platinum electrode, has been tried frequently and while the applications seemed to improve the general health of some cases, stopped hæmorrhages and greatly relieved dysmenorrhœal pain, I cannot claim to have dissolved any single fibroid or made even an arrest of growth of a cystic fibro-myoma. I caused an abdominal peritonitis by a puncture of a large fibroid through the abdominal wall, and have seen one case, where sepsis was caused by a physician, in the use of an intra-uterine electrode.

I have, at this time, under treatment two large fibro-myomata both of which have developed above the umbilicus; one has had about 80, the other 50 intra-uterine applications, one case has ceased to have hæmorrhages, both have improved in general health.

I recall the case of a fibroid, which I detected when as small as a pea, located on the anterior lip of the cervix. It was not only favorably located for ready application of the current, but for the easy recognition of changes in its size. In the last 18 months I have made 25 electrolytic applications to it. It has trebled its size despite my currents.

I may not be as expert with my batteries as others who are claiming so much for electricity in the solution of fibroids, but I insist that I have, after over two years of persistent effort with a considerable amount of material, some justification for having lost my enthusiasm and even in being discouraged as to this so-called conservative plan of dealing with fibroid tumors, pyosalpinx, cystic ovaries and the like disorders, which in many cases march straight on to death, or what is worse, to chronic, hopeless invalidism.

The treatment of fibro-cystic myomata by electricity, is well nigh obsolete. Cases have been recorded where abscesses have resulted and ended fatally. Whether aspiration and drainage of such tumors in conjunction with electro-puncture will remove the dangers, is not yet proven.

As soon as fluctuation is determined in a fibroid, extirpation should be resorted to.

The rules of differentiation, the attendant dangers and the treatment of fibro-cystic myomata are the same as ovarian cystoma. Indeed, the operation of gastrotomy for tumors involving the uterus has been evolved out of the work of the ovariotomist, in the last quarter of a century.

Whenever an ovariatomy is performed the equipment of an operator should embrace the additional instruments required in a hysterectomy.

A CASE IN OBSTETRICS, FOLLOWED FOR MONTHS BY A DAILY DISCHARGE OF OVER TWO QUARTS OF A WATERY FLUID THROUGH THE CERVICAL CANAL.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY JOHN HAMMOND BRADSHAW, M.D.,
OF ORANGE, N. J.

On December 9th, 1890, a colored woman, aged 34, was confined at the close of her seventh pregnancy. She had borne three girls alive and easily, and three boys, two dead, and all with great difficulty. Finding a face presentation, apodalic version was performed, but not before two ineffectual attempts with the forceps had been made. The child was a male, weighing 12½ pounds, with a large ossified head. It was dead. The woman had been in labor two hours. After the birth of the placenta, there was an unusual amount of hæmorrhage, and the patient went into a condition bordering upon collapse. The extremities were bandaged and ligated, and whisky was administered with digitalis by hypodermic injection. Two quarts of a hot corrosive sublimate solution 1-3000 were thrown into the uterus, the hand carrying the nozzle of the syringe to the very fundus. There were no new lacerations to be discovered, and the patient made a fair convalescence without much pain and with but little elevation of temperature. Three weeks

after delivery the patient was seen because of a flow of water that came from the vagina, wetting the bed and everything upon which she was placed. Fearing the existence of a vesico-vaginal fistula, the patient was carefully examined with a speculum. The vaginal wall was intact and a watery discharge could be distinctly observed, coming through the cervix, which was badly lacerated. The probe passed only into the uterus. At the suggestion of Dr. William Pierson, a pint of a colored solution was injected into the bladder. But as none came through the cervix, the patient, after a few minutes, passed the entire quantity again *per uretham*. As the patient's life was made miserable by the constant wetting, one of Jay's urine bags was inserted into the vagina to catch the fluid that came so copiously through the cervical canal. During the first twenty-four hours this caught just eighty ounces of a clear, colorless fluid, of no smell, a slight cloudy sediment on standing, sp. gr. 1001, alkaline reaction and slightly albuminous. Microscopically, there were found pus cells, granular detritus, a few large, epithelial cells and fibrin. The patient had voided in this time 18 ounces of urine of a rich amber yellow, sp. gr. 1018, acid in reaction, and with normal appearance under the microscope.

An examination of the patient revealed nothing in the pelvis or abdomen out of the way. The patient had never been seen by the writer before her accouchement; she had herself never observed or felt any swelling or abdominal tumor; she had never had a large abdomen.

During December, January and February the patient passed daily through the cervical canal, actually, over two quarts of this colorless fluid. Her appetite and general health was fairly good; she gained in weight and flesh; there was never any distention of the abdomen. But the patient was an invalid—she could do no work, and lay on her bed most of the time. Consultations were held, and Drs. Ill, Pierson, Harvey, Graves and Stickler saw and examined the patient.

During several of the examinations a probe was passed apparently through the fundus of the uterus into the abdominal cavity. It entered easily and without force, almost to a limitless extent (at least its entire length and that of its handle), while its point could be felt close under its abdominal wall above the umbilicus.

For three months she passed about two quarts of this colorless fluid through the uterus. At the end of this time the patient was given ½ grain codeia every three hours, with the hope that it might diminish the flow. This it speedily did, and in two weeks time the patient removed her Jay bag, as she passed but a few drops of the fluid per day. The codeia made her very drowsy at first and some constipated, but not so much so but that an enema would give relief. The codeia was then stopped, whereat the discharge began again, but only to the extent of four to sixteen ounces a day. At this time Dr. Howard A. Kelly saw the patient in consultation.

At the present time, just six months from her confinement, the patient, provided she keeps still, passes little or no fluid. If she walks about she voids from two ounces to a pint a day. She still takes the codeia, but at intervals of several days, and then only if she has pain or if the discharge of fluid is profuse.

The writer has purposely refrained until now from giving any definite diagnosis that will explain the source of the discharge. There has been a difference of opinion. After watching and studying the case for a long time I affirm that this fluid comes from the peritoneal cavity and is generated by the peritoneum. By the majority of those that have seen the woman it is held that an opening exists in the uterine wall, making a free communication with the peritoneal cavity. It is hoped that if any are present who have seen and examined the woman that they, as well as others, will express their views.

The patient remains an invalid. Can an operation or any other kind of treatment relieve her of her affliction?

THE USE OF VAGINAL TAMPONS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-Second Annual Meeting of the American Medical Association, held at Washington, D. C., May 5, 1891.

WILLIAM A. B. SELLMAN, M. D.,
OF BALTIMORE, MD.

I am extremely doubtful whether I have selected a proper title for the paper which I have the honor of presenting to this section.

The placing of cotton or materials of similar nature in the vagina is termed tamponade, where a small amount is placed in the canal for purposes other than hæmostatic. Tampon signifies the complete packing of the vagina to stop or avoid uterine hæmorrhage.

I use the word tampon in its broadest sense to denote placing of cotton, jute, etc., in small or large quantities, either for hæmostatic purposes or as a means of placing drugs against the cervix uteri, or as a preventive to the escape of liquids we have applied within the uterus to prevent them passing down and irritating the external genitals. Most gynecologists, when they treat their patients in the office, apply a pledget of cotton against the cervix to prevent the irritating agents employed in the treatment of the case from escaping and excoriating the external genitals during the journey to their homes.

I do not propose to add to the present knowledge in regard to the beneficial action exerted by the applications made on these tampons, or enlarge upon the good results obtained by their

use as a means of supporting displaced organs. Neither do I intend to tell you how to make them, or introduce or remove vaginal tampons; you are thoroughly experienced in all these matters. I rather intend to convey in this paper my impressions of the dangers attending the use of tampons, and I will also endeavor to prove that on many occasions when we think that we have applied them in a scientific manner, that it has been improperly done, and carried out in a manner that will do much harm to our patient, and, perhaps, develop injuries that may require months of treatment to overcome.

In the first place I declare that vaginal tampons introduced for hæmostatic purposes are seldom required, and when used are likely to be attended or followed by great injury to our patient. I make this exception, the use of the tampon for the purpose of provoking uterine contractions and softening of the cervix in cases where we desire to bring on premature labor, as for example, cases of placenta prævia. The packing of the vagina is sometimes justifiable in cases of hæmorrhage due to the presence of uterine fibroids.

I do, however, object to the indiscriminate use of tampons to control uterine hæmorrhages. Examine and find out what has caused and is keeping up the hæmorrhage; remove the cause and the flow will cease. Many a woman has had tampons placed in the vagina where the hæmorrhage has been due, either to retained placental shreds, or perhaps to fungosities existing on the uterine walls. The use of the curette will remove the cause and the flow will cease. If you use the tampon in cases of this nature, the collection of blood, etc., will finally distend the cavity of the uterus, and perhaps dilate the opening into the Fallopian tube, frequently expanding this canal, and the fluid passes into the abdominal or peritoneal cavity. In a practice extending over a period of twenty years I have never seen a case where I have found it absolutely necessary to tampon to relieve uterine hæmorrhage. I have invariably sought for the cause and gave local treatment or removed it.

Dr. Mundè says, "Every practitioner who takes, and is liable to meet with, cases of uterine hæmorrhage, from miscarriage, polypi, polypoid endometritis, fibroid uterus, or cancer, should not only possess a Sims' speculum, but know how to use it and how to tampon the vagina so securely that not a drop can escape so long as the tampon is retained."

I take exception to this teaching and think that it is likely to mislead and be productive of great mischief to the general practitioner, and the medical man starting out in his professional career dependent upon the advice and experience of his teachers to guide him in the treatment of this class of cases. He is likely to feel too safe so long as he perceives no oozing by the side of his packing, and loses sight of what may be taking place internally. Even in hæmorrhage occurring during the progress of cancer of the cervix it is unsafe to tampon. It is far better to apply a hæmostatic agent directly to the bleeding surface by means of applicator or syringe.

The presence of tampons in the vagina interferes with the evacuation of the bladder and with the proper emptying of the rectum.

In cases of profuse hæmorrhage I frequently have it suggested to me to pack the vagina until the patient has recovered from the prostration due to the loss of blood; when she is stronger you can remove the cause. I consider this bad reasoning. If you are called to see a case of profuse hæmorrhage from the nose (epistaxis), due to the presence of a nasal polypus, you certainly would not plug the nostrils, you would remove the growth and thus check the hæmorrhage.

There are cases where the hæmorrhage comes from the walls of the vagina where the application of the tampon is justifiable, for the pressure of the packing controls the loss of blood by compression of the bleeding vessels.

Tampons are responsible for the production of serious inflammatory conditions of the uterine adnexa, peritoneum and cellular tissue.

After an application of iodine, iodide of potash, nitrate of silver, sub-sul. of iron, etc., a tampon is frequently introduced in the vagina to prevent excoriation of the external genitals by the fluid flowing out of the vaginal outlet. Sometimes it is a small pledget or thin layer of absorbent cotton wet with glycerine or medicated with borax, lead, or tannin. At other times a larger piece is introduced, forming a vaginal plug. The result is the same in both instances. The secretion in the cavity of the uterus is increased by the agents employed for the application; the cotton placed against the cervix uteri completely prevents the escape into the vaginal canal; the result is distension of the cavity of the uterus by the fluid exuding from its walls, this is accompanied by pain, a sensation of fullness within the uterus, what we term uterine colic. This distension may continue until the fundus is dilated, the opening into the Fallopian tube allows the uterine secretions to pass into the tubes; at times the fluid may distend the entire tube and the secretions pass into the abdominal cavity, setting up inflammation at this point. Very fortunately for our patient, on many occasions after a moderate amount of distension has taken place, the accumulation forces the tampon to one side and the fluid is discharged by the vagina.

In this way I account for the violent pains following intra-uterine applications, even of a mild character, when we have placed the vaginal tampon for the purpose of cleanliness.

When we remember the effect of applying these agents to the mucous membrane lining the nostrils, the free secretion provoked lasting in many cases for twenty to forty hours, we can appreciate the amount of fluid thrown out from the uterine mucous membrane after applications of similar nature.

There is a class of cases having a profuse discharge from the endometrium, the characteristic glairy, white of egg mucus; some physicians treat these cases by merely placing a pledget of medicated cotton against the cervix uteri. This tampon effectually prevents all discharge from passing out of the uterine canal, the cavity becomes distended, the purulent secretion may pass into the Fallopian tubes, setting up a similar inflammatory condition in their mucous membrane as already exists in the walls of the uterus. The tampon under these conditions is dangerous, is productive of great mischief applied in this manner. Many a woman has had gonorrhœal inflammation forced from the vagina and lower portion of the uterine canal into the Fallopian tube by having a tampon placed in the vagina. I make it a rule never to apply a tampon in specific vaginitis.

I am extremely doubtful of the propriety of the use of tampons placed against the cervix in cases of epithelioma or cancer of the cervix uteri.

It has been suggested that we use tampons in cases of inflammation of the ovaries and the Fallopian tubes; the idea advanced is that the tampon supports the uterus and prevents the organ from dragging and exerting traction upon the uterine adnexa. The danger of using these tampons is that suppuration may take place whilst the tampon is in position, the purulent secretion will pass into the cavity of the uterus and will be prevented from passing out by the presence of the vaginal tampon, and may be forced back into the peritoneal cavity, lighting up inflammation at that point.

The treatment of inflammatory conditions of the cervix and uterine body by vaginal tampons, as suggested by Dr. Engleman, has not accomplished the good results we expected when the treatment was advised by that illustrious gynecologist. One reason of failure, I think, is this one point that I dwell upon with so much earnestness, that is, the discharges are prevented from flowing out of the cavity of the uterus.

In conclusion, I would advise the application of tampons only under the following conditions:

In office practice, after making an application to the endometrium, if the agent employed is likely to flow down and excoriate the external genitals, I place a very thin pledget of absorbent cotton lightly against the cervix; this will absorb the secretions; I tell my patient to remove it immediately upon her arrival home.

In cases of prolapse of the uterus, where there is no uterine catarrh, using it as a pessary. Also in cases of prolapse of the vaginal walls under similar conditions.

After plastic operations upon the vaginal walls where there is no danger of hæmorrhage taking place above the point where the tampon has been placed.

In cases of hyperplasia with little or scanty secretion from the endometrium, I frequently place a small pledget against the cervix uteri; this may be medicated with glycerine, borogyceride, glycerate of lead, etc.

The application of tampons to correct displacements of the ante- or retro-character is very unreliable. It is so difficult to place the pledgets so as to avoid increasing the displacement. Besides, the pressure of the tampon often interferes with the circulation in the pelvis. I have frequently had patients complaining of pain located in the hip or down one leg after the application of a tampon or tampons.

NON-SURGICAL TREATMENT OF CANCEROUS UTERI.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY C. R. REED, M.D.,
OF MIDDLEPORT, O.

It is not the purpose of this paper to condemn the surgical treatment of cancer of the uterus; nor would the writer claim that a majority of the malignant diseases of that organ should be treated by medicine alone, for he admits that cancer anywhere should be treated, when practicable, by local remedies, and that general medication has little or no influence over the disease, and the vaunted specific he would only mention to condemn. The proposition to treat cancer with the curette and local applications would appear absurd after reading the above title of the paper, yet the paradox will seem logical, as we proceed to illustrate our position.

The non-surgical treatment of cancerous uteri is the disuse of the scalpel or knife, as unnecessary, in many cases; while probably a majority of cases, when first seen by the physician, require the total extirpation of the diseased organs, but it is not in the interest of medical science or suffering woman, to treat all cases of uterine cancer, at once, by what is called the radical operation. The writer pursued this course several years, telling the patient and her friends that there was nothing to be done for her but total extirpation of the cervix, at least, and better that the whole organ be removed; and as she would not follow this advice, he obstinately refused to do anything, and telling her and friends to let her die if she wished—which she usually did. He has

since concluded that he made a mistake, that a dangerous surgical operation is not always necessary, and that his declaration and acts were not always in the interests of the patient and humanity, nor the science and art of medicine and surgery. If the suffering woman refuses to submit to the knife, of which most all of us have a dread, and is willing to undergo the more painful, but less dangerous, use of the curette and the cautery, she certainly has a right to her choice, and the physician should, frequently, gracefully acquiesce. It may be claimed that this *is* surgical treatment. Call it minor surgery, if you please—she and her friends have a right to choose it, they taking the responsibility of the result. There are many other diseases to which women, and men also, are subject, which would best be treated by surgical operations to which they often will not submit, but they should not be abandoned to fate, if they can be cured or relieved by less objectionable means.

The prejudice against surgical operations is innate in the human race, and cannot be eradicated, and it becomes necessary to devise other means of treatment, which may often, at least, attain the same end. The woman should not be subjected to a dangerous operation if she can be cured or relieved by means less fatal. That the removal of the uterus, by any of the means recently devised, is frequently fatal, no one will deny; that cancerous uteri can be arrested in its progress, and often cured, by local treatment attended with little or no danger to life, is a well established fact. The purpose of this paper being to give the result of my own observations, I will quote but a single paragraph from authorities on the subject. In his late work on Diseases of Women, A. J. C. Skene, of Brooklyn, in speaking of treatment of cancer of the uterus, says: "A thorough curetting, followed by powerful caustics, will frequently arrest the progress of the disease."

Mrs. F., aged 60, mother of several healthy children, had passed the menopause ten years since, and had enjoyed good health until early in 1889, when she observed a red flow which at times was profuse, and rapidly destroyed her strength; she also had pelvic pain, and when the hæmorrhage was slight she had a profuse watery discharge, which had the odor characteristic of malignant disease. During 1889 she gradually lost strength and flesh, and spent most of the time in bed. She was attended alternately by two physicians, members of this Association, who had persistently kept from her the true nature of her disease. Not receiving any apparent permanent benefit from the treatment, which was both general and local, and not understanding why she did not get better, she discharged her attending physicians and sought my advice, and I first saw her February 4, 1890. I found her in bed, unable to sit up but little, emaciated, and the cancerous cachexia well marked, and to relieve her suffering she had contracted the morphine habit, with all its dire results. I should have said her parents were living, each about 90, and she had been a widow some twenty years. On a tactile examination I found a carcinomatous cervix, patulous, and that characteristic feel as when you poke your finger into the nozzle of a shotgun. There were also several nodules which felt like large shot in the posterior part of the vagina. The examination caused hæmorrhage, and on expanding the blades of a bivalve speculum, it was so profuse that I felt relieved when I secured its arrest by applying the pure persulphate of iron.

She was told the nature of her disease, the prognosis of such cases, and was advised to undergo the removal of the diseased organ. This she firmly and pleasantly declined, believing she would not live through the operation, and I did not urge it, as I was of the same opinion. She implored me to do what I could to prolong her life; she wanted to live until her parents passed away, and asked that the attacks of hæmorrhage which she so much dreaded be arrested. I did not think that the body of the uterus or its appendages were involved, and had some hopes that temporary relief might result from active local treatment. She lived in an adjoining State, and I visited her once a week, and each time used the sharp curette, followed by the pure chromic acid. I prepared a swab of absorbent cotton, as large as would pass into the cervical canal after I had rapidly reamed it out with the curette, and on withdrawing the latter, immediately dipped the swab into water, then into the dry chromic acid, and carried it as far as possible into the cervix and cavity, and held it there until the hissing and smoke ceased, then withdrew the swab, packed the cervix with cotton saturated with the pure persulphate, which was directed to be removed by a string attached for that purpose, in three or four days. The hæmorrhage from the use of the curette would be fearful, but immediately stopped on contact of the chromic acid. She was directed to let me know should hæmorrhage occur in the intervals of my visits, and but once did she send for me.

When I left home a year ago to attend the meeting of this Association at Nashville, I arranged with a physician near her to apply the treatment in my absence. This was continued regularly for several months, the hæmorrhage ceasing, the local symptoms disappearing, the general health improving, flesh, strength and color returning, and when I left home in October last for a several weeks' visit in the West, I had no forebodings in regard to her case, and when I saw her in November I found her doing her work, apparently well and happy, with scarcely a trace

of her former disease on examination. I have not seen her for several months, though frequently in sight of her house, and learn that she is apparently well. I commenced the treatment of this case with a mental prognosis that it would end fatally in from four to six months—but during a professional life of nearly forty years I have attended no case that the treatment gave me more satisfaction than this, and I have the still greater pleasure of the assurance that the treatment at no time and in no way imperiled her life.

Will the same treatment be generally successful in similar cases? This can only be determined on trial. Could the treatment be as well carried out during menstrual life? Probably not. Will the apparent cure in this case be permanent? Of this I will not affirm, neither can it be foretold of the cases in which the radical operation of entire removal has been done.

It would not be consistent with the intended limits of this paper to give other cases in detail, and had no other cases come under my observation with a similar result, and no case in the literature on the subject, this alone would be sufficient to induce me to use the same or similar treatment before resorting to the operation of removal of the entire organ and appendages, with the present mortality attending the radical operation.

ON THE USES OF COCAINE IN GYNECOLOGICAL SURGERY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D.C., May, 1891.

BY WM. H. HUMISTON, M.D.,
OF CLEVELAND, OHIO.

I have had an experience in the use of cocaine in gynecological operations during the past three years that has been eminently satisfactory, and I purpose in as few words as possible to lay the method and my experience before you.

I will first describe the manner of its use in dilating and curetting. Ten minutes before using the cocaine I give a tablespoonful of whisky or brandy. Place patient in the left lateral position, and with Sim's speculum expose the cervix—steady the uterus with a tenaculum inserted in anterior lip. Then take a hypodermic syringe with a fine needle, filled with a 4 per cent. solution of cocaine, which has two minims of pure phenol in each half-ounce of solution, and inject five minims into the posterior lip—wait two minutes, then secure a firm hold with bullet forceps, which will be painless. Proceed and inject in several portions of the cervical canal an amount equal to about twenty minims. I now commence my dilation, with the graduated hard rubber dilators until the cervix is sufficiently dilated to permit the entrance of the intra-uterine syringe, when ten minims of a 10 per cent. solution is inserted into the uterine cavity. Continue at once with the dilating of the cervix until you have it completed to the extent desired, and then thoroughly curette the entire uterine cavity. This can be done with a slight degree of pain, and in many cases with none at all. I have not given an anæsthetic, other than just described, in dilating or curetting, during the past three years, and the cases include many primiparæ.

For the operation of trachelorrhaphy you can use cocaine and have absolutely a painless operation. Inject the angle, and the sides that you desire to freshen, or a wedge-shaped piece that must come away, and you can complete it all without the patient making a complaint. You will rarely require to use over one-half drachm of a 4 per cent. solution.

For restoration of the perineum in the majority of cases I adopt the split-flap method, and with one puncture of the hypodermic needle in the median line I anæsthetize the whole field of operation, and use only from thirty to forty minims of a 4 per cent. solution.

The hour for operating is usually 9 o'clock in the morning. The patient omits breakfast, and ten or fifteen minutes before the operation the alcoholic stimulant is given.

I say to the nervous timid patients, who are afraid that without chloroform, or ether, that their suffering will be great, that I will stop at any time that they say that they are suffering pain, and give them chloroform. This secures their confidence, allays their fears, and I have yet to hear the first request for another form of anæsthetic.

With this method we avoid the frequent and prolonged nausea and vomiting that occurs after the administration of chloroform or ether. The patients, with but few exceptions, relish their dinner, and their progress towards recovery is rapid and satisfactory. Had chloroform been given, and been followed with persistant vomiting, that so frequently occurs, the whole success of the operation, especially if it be for the restoration of the perineum, would be in jeopardy.

Quite frequently I find patients who are very sensitive, and very small doses will induce short and sighing respiration, together with peculiar sensations in præcordia, accompanied by great anxiety. Stimulants, promptly administered, control this very quickly and all unfavorable symptoms subside.

Twice I have dilated the urethra for fissure and irritable caruncula with but slight suffering, and a satisfactory result was obtained.

I assisted in one case of Alexander's operation where cocaine was used, but two grains in all, one grain injected on each side at intervals of one-half hour. While this was not painless the pa-

tient complained but very little, and withstood the operation well, with no bad after symptoms.

I have selected the following case as one of interest not only for its multiple operations, but to demonstrate the capabilities of cocaine as a local anæsthetic under a prolonged operation. The operations of trachelorrhaphy, anterior and posterior colporrhaphy and perineorrhaphy, at one sitting with cocaine for an anæsthetic:

Mrs. L., aged 39, married nineteen years, two children, youngest 10 years old, came first to consult me in November, 1888, complained of constant backache, very nervous, forgetful, bearing down sensation, felt "as if everything would fall out," to use patient's own language, leucorrhœa, frequent micturition and headache. Patient presented the appearance of a sufferer, pale, sallow complexion, dark lines under her eyes, and quite a degree of prostration. On vaginal examination I found a partial laceration of perineum, os uteri large, swollen, tender and lacerated, edges everted and granular—thick, tenacious secretion in abundance in cervical canal. Uterus prolapsed, body large, tender. Ovaries swollen and very sensitive. Cavity of uterus measured three and one-half inches. Upon directing the patient to strain down the anterior and posterior walls of the vagina bulged forth separating the labiæ. The vaginal walls were hypertrophied and relaxed. Patient was treated locally at my office every third day for two months. Treatment consisted in removing the secretion from cervical canal. Application of iodine and glycerine—scarification—tampons of glycerine, and boracic acid. To be followed at home with copious injections of hot alkaline water. The swollen conjested condition was markedly diminished and patient steadily improved until January 10, when patient entered my private hospital for operation. Curetting was done January 11, and the granular hypertrophied endometrium removed and Monsell's solution of iron thoroughly applied to the uterine cavity. This was all accomplished with but little pain after the method previously described. For the next two weeks patient's temperature varied from 97⅜ to 98⅘. Patient was kept quiet in bed and after the first week, tampons of iodine and glycerine were applied daily. January 27, uterine cavity measured three inches. Position of uterus higher, and has felt relief from all symptoms complained of. As there was no appreciable pelvic exudate, or signs of remaining inflammation, I decided to make as many of the operations at one sitting as possible; gave patient one-half ounce of whisky. The cervix being lacerated bi-laterally, I made the double operation. first injecting fifteen minims of cocaine in the space I wished to denude. I generally use Skene's hawk-bill scissors to freshen the angles, as it thoroughly removes the tissues from the whole angle. After preparing my flaps on both sides I united the edges with silver wire sutures, using the spiral coil and shot fastener. Patient complained of but very little pain, and when asked if she could endure more, she replied, "Yes, go ahead." I now exposed the anterior vaginal wall, and injected twenty minims of a 4 per cent. solution, and removed in one body an oval-shaped piece of mucous membrane extending from within three-fourths of an inch of the cervix down for two and one-half inches. This was brought together and united with a deep and superficial continued suture of cat-gut. Some five minutes after this second injection of cocaine the patient complained of dryness of the mouth and fauces, and had some irregular breathing. Another one-half ounce of whisky was given, and soon she was comfortable, and requested to have everything done at once if she kept feeling as well as she was at the present time. The posterior vaginal wall was exposed after Martin's method, and the mucous membrane to be removed was injected in the same manner and amount as the anterior wall; waited five minutes and began removing the portion mapped out; again the patient complained of the dryness of her mouth, and the breathing became short and labored. Whisky was again administered and in a short time the unpleasant sensation subsided. A deep and superficial continued suture of cat-gut was here used, and the edges carefully and evenly brought together down to the line where it was to join the upper angle of the denudation for the restoration of the perineum. At several points in taking the stitches the patient complained of pain, but not sufficient to call for more cocaine. Two drachms of whisky were now administered, and the surface to be denuded for the restoration of the perineum was injected, using again twenty minims of a 4 per cent. solution. After waiting a few minutes I commenced to denude the surface mapped out; no pain complained of, but the former unpleasant symptoms returned, and a little more stimulant was given. The perineum was united with silk-worm gut, using a long-handled needle to put them in. In penetrating the edges near the skin, patient complained of the pain being quite severe, but I did not wish to use any more cocaine, and she endured it with but little complaint or moving. The stitches were tied and the whole time consumed in making the four operation: was one hour and forty-five minutes, and seventy-five minims of a four per cent. solution of cocaine had been used, equal to 3 grains. The patient's knees were bound together, and she was placed in bed on her side. A 2-grain suppository of svapnia was given per rectum. The temperature remained absolutely normal for two days, after which it rose to 99⅕; the fourth day it was 99⅖, the highest point

reached, then fell to normal, and remained so during the whole recovery. She was catheterized twice daily for two days, after which voided her urine as usual. The vestibule was well washed with boracic acid solution after each urination. Bowels were moved on the fifth day. The parts were handled as little as could be, and patient kept absolutely quiet. The sutures in perineum were removed the seventh day, and union was perfect. On the 27th day the sutures from the cervix were removed and union everywhere found perfect. No vomiting occurred. This I regard as a severe test for cocaine, and will, I feel, result in removing the great fear arising from the necessity for taking ether or chloroform in order to have these operations performed.

Strict asepsis must be attained in order to have these operations unite and heal readily without inflammation.

LAPARO-HYSTERORRHAPHY—AS A MEANS OF CURE OF CASES OF EXTREME PROLAPSE, OR RETRO DISPLACEMENT OF THE UTERUS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, at Washington, D. C., May, 1891.

BY W. J. ASDALE, M.D.,
OF PITTSBURGH, PA.

We believe we shall encounter but trifling controversy in asserting that the mechanical treatment of uterine prolapses and displacements has proven to be entirely inadequate to cure, in by far the greater number of cases.

It is safe, too, to declare that the best adapted pessary—while promising palliation only, and not cure—is liable itself to become a nuisance; and not infrequently does beget for the wearer conditions much worse than the former states.

Finally, for a number, including nearly all of the cases of extreme prolapse, and all of the cases of marked retro-displacement with incarceration of the uterus, the use of a pessary or any mechanical support cannot be tolerated: for such, at least —a minority of all, but comprising a large per cent. of the whole—surgical methods must, unavoidably, intervene.

Contraction of the calibre of the vaginal tube, by surgical procedure, by any method whatever, as a means of recovery of the prolapsed womb—no matter how carefully performed, nor how extensive the section, must often fail of permanent good results; this plan, besides, is objectionable for reasons arising out of the social state.

Shortening of the round ligaments, as a method of permanent restoration of the prolapsed or otherwise mal-posed uterus, has not, in the experience of the writer, provided favorable results, and, employed alone, we unhesitatingly affirm, will often be found inefficient.

Operation by vaginal suture taken through the uterus is inapplicable to many of the examples of displacement, certainly in all of those in which extreme flexion exists, with the womb bound by firm adhesions to the bottom or posterior wall of the cul-de-sac.

In all cases in which retro-deviations are coupled with fixation of the uterus by exudate-membranes, any treatment, to become effective, must include, primarily, the solution of the confining bands.

In the less aggravated cases of the chronic class much may be accomplished often — at first, preferably, through depletion; by punctures or scarification, the employment of glycerine-tampons, iodine and the hot douche; finally, and chiefly, by the prolonged, regular, continuous and careful application of vaginal packings, in the knee-chest posture — using wool-pledgets instead of cotton. Forcible taxis, under anæsthesia, should be employed, in suitable cases, repeatedly, in effort to release the adherent uterus, where the ordinary treatment has failed.

All attempts at solution or rupture of adhesions by indirect methods must, for a considerable number of cases, result in failure; for these, to succeed, the peritoneal cavity must be entered. Abdominal section being for the purpose made, rectifying ventral suture of the uterus, or through, or over its ligaments, is the natural and justifiable sequence.

Here, venturing to assert that ventral fixation of the uterus, in those cases where section of the abdominal wall is a preliminary, is not more hazardous — where proper precautions are observed — than suture, blindly taken, without section, by any of the other methods yet proposed — there remains to be particularly noticed, that a special and very material advantage concerning the final results, is gained by exposure of the pelvic contents to ocular and direct digital inspection. Every operator of much experience can recount a number of instances where, unexpectedly, an occluded and dilated, or distorted and adherent tube, presented, or an invested or diseased ovary. Neglect of like complicating conditions, in operations for prolapse or displacement of the uterus, must, necessarily, most seriously embarrass, often, perhaps, defeat the legitimate results of treatment.

The following cases — all that have been subjected, specially, to treatment for prolapse or displacement, by ventral fixation of the uterus after abdominal section, at the hands of the writer — are reported as contributing in some degree to determine the management appropriate to those of severe sort of their class:

Case 1.—Mrs. F., age 43; widow; multiparous; residence Pittsburgh. When first seen the

swollen and hypertrophied organ rested in complete prolapse between the thighs, exposed mucous surface extensively abraded; condition has existed for eight years; has "not been able to wear any supporter" in the vagina for a long time, because every such trial made her worse. Suffers from all the usual attendant miseries: headache, backache and aching of lower limbs; profuse menstrual and leucorrhœal discharge; vesical and rectal tenesmus, etc.

The uterus being reposited, the tubes were found saculated and ovaries abnormally sensitive. Castration and hysterorrhaphy were proposed and accepted. After due preparatory treatment operation done May 23, 1889, in presence of and assisted by Drs. Cameron and Sands. Short medium incision. Appendages removed. A single, medium, silver wire suture, carried deeply into anterior wall over body of uterus, bringing uterus and wall into relation at highest possible point; the ends of wire separately armed and carried out through wall on right and on left at lowest part of incision; wounding of bladder avoided; a double catgut ligature was carried through each of the broad ligaments close to the stumps, and passing directly out through abdominal wall. Were tied down at the surface over sections of small rubber tube; the exposed peritoneal surfaces were abraded by lightly scraping with curette, when the wire suture was secured by twisting; incision closed throughout by silver sutures; powdered boracic acid dusted over site of incision and sutures; dry dressing and bandages. The womb suture (silver) was removed on tenth day after—catgut sutures earlier. Wool tampon with boro-glyceride was employed for a time in vagina. Patient's recovery prompt. Visited on May 1, 1891. Mrs F. says: "I am about 25 pounds heavier than at the time of operation, and in better health than at any time before, since my baby was born, over eight years ago. My womb has never come down since the operation, and I suffer from no pain and no annoyance whatever. I do my own housework and washings, now, something I was not for a long while before able to do."

Case 2—Mrs. J. J. W., age 24; nulliparous; residence, Pittsburgh; married 5 years; suffered since before marriage; has very constant backache and pains in lower limbs, and headache; all her pains greatly intensified at every menstrual occasion. Examination shows uterus to be strongly retro-fixed and confined in that position. Patient was treated regularly for almost one year, by the writer, by vaginal packing, also by taxis under ether, and without material improvement. Laparotomy and division of adhesions with suture of womb to anterior wall proposed and accomplished by operation, June 3, 1889. Present, Drs. Emmerling, Sr. and Jr., Prof. Dunn and Dr. Cameron, assisting. Uterus practically excavated from the rectal pouch; its entire posterior surface bloody from the oozing in consequence of its detachment; bleeding points seared; tubes adherent and occluded at ostia externum, and fimbriae inverted; tubes were set free and mouths teased open by fingers of operator; ovaries buried in exudate, uncovered without mutilation; no removal of parts. Two silver sutures in womb and through wall; catgut sutures passed to include round ligaments and tied down at surface of abdomen, right and left, as before, over sections of rubber tube. Bladder uninjured in operation; peritoneal surfaces abraded; womb sutures twisted, and incision closed; boracic acid sifted, dry, over site of operation; antiseptic gauze and bandage applied. All sutures removed in ten days. Patient's recovery uninterrupted. The normal position which the womb was made to assume by the operation is since perfectly preserved. This lady, Mrs. W., was last seen by me on May 2, 1891. She was found at her home and her husband's place of business—a busy woman in a bustling restaurant in the city of Pittsburgh—in the kitchen, where she stated she superintended all the cooking, and from very early in the morning until late at night, and daily, and thrived, notwithstanding hard work. She said: "I am well, first-rate; I have no aches nor pains. I change regularly, and without any pain."

Case 3—Mrs. L., aged 47; primip.; residence, Pittsburgh; suffered more or less severely since soon after the birth of her child over eight years ago; especially from lumbar pains; headache, and gastric and intestinal symptoms. Uterus retroflexed.

Operation Feb. 4, 1890; medium incision; right ovary a bunch of small cysts; removed right ovary and its tube. Rectified position of womb and secured same by two silver sutures, taken through womb and wall as in previous cases; catgut sutures, laterally as before described. The sutures were removed in the usual time, but suppuration in the suture tracks occurred; and, eventually, through a fistulous opening which persisted in the right wall, the ligature placed at stump of ovary, escaped. The normal position of the uterus is maintained by that organ. Mrs. L. was interviewed on April 30, 1891. She said: "I have gained in weight, and I do not suffer with my head at all, as formerly; in this respect I am a great deal better—otherwise I cannot say that I have gained. I am regular."

Case 4.—Mrs. J. H. L., æt. 28; primiparous; residence Allegheny; has a very deep bi-lateral laceration of cervix uteri; relaxation of vaginal outlet and complete prolapsus uteri; has been over three years in present state. May, 1890, operated for restoration of cervix and vaginal walls. Result: September 22, 1890, complete and thoroughly satisfactory repair of cervix and ample closure of vulvar opening, but, when patient,

standing, strongly exerts herself in "forcing" the uterus, that organ descends to the level of the labiæ. September 22, 1890, operation by laparotomy and suture as in cases 1, 2 and 3 detailed. Two silver wire womb sutures and two catgut sutures over each ligamentum rotunda; no mutilation of parts; incision closed and wound dressed as before. Sutures removed in the usual time. Examination of the synoptic chart preserved in this case shows in most remarkable manner how slight the disturbance following this operation may be in well conducted cases. The highest temperature noted during the times for which the record is kept occurred on the evening of the first day, and was 99⅘° F.; the highest pulse-rate 100, same date and same hour. Opium was withheld. Nor was there sufficient pain, as a result of the operation, at any time, to make excuse for its use possible. The intestine was regularly and freely evacuated by the use of calomel and drastic enemata. The patient was permitted to relieve herself of urine over the pan. The cases were all treated at their homes, but nursed by intelligent and trained nurses. The strictest aseptic precautions were in all respects observed.

The first, second, and last cases offer us good examples of their kind where this important surgical interference is demanded, and the test of efficiency of method has been, for each one of these operations, severely tried; and we may now claim reasonably that sufficient time has elapsed to enable us to claim cures. The remaining case was probably not so carefully selected for operation, and not so well understood, partaking in its character of neuroses derived through gastric derangement and digestive disorder.

THE AFTER-TREATMENT OF CASES OF ABDOMINAL SECTION.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May 1891.

BY CHARLES P. NOBLE, M.D.,

SURGEON IN CHARGE OF KENSINGTON HOSPITAL FOR WOMEN, PHILADELPHIA.

According to Oliver Wendell Holmes, to successfully treat an individual one should begin with the grandfather. The same principle applies to the successful after-treatment of cases of abdominal section. Whenever possible, careful preparatory treatment should be carried out. Nutrition should be improved, when depraved; the enunctories should be made active, especially the bowels and skin. Operation should be rapid, careful and thorough. Diseased, and especially suppurating, structures should receive most careful attention, and unless vital, organs be completely removed. Asepsis in clean operations, and irrigation and drainage in dirty operations, are essentials. Under such conditions, unless operation has been made a last resort, or the vital organs of the individual are seriously crippled, proper after-treatment of cases of abdominal section will insure a successful result quite uniformly.

That which is accomplished by after-treatment in cases of abdominal section is principally of a negative character. The object is to protect the patient from all sources of danger, while nature does her perfect work. The most positive ends accomplished are: to sustain the powers of life to enable the patient to pass a crisis; to keep the enunctories active; and to prevent wound secretions from becoming a source of poison.

The after-treatment of typical cases of abdominal section is extremely simple. By typical cases I mean those in which the operation has been done satisfactorily, without special loss of blood, and in which the patient goes to bed without marked shock.

The room in which the patient is to remain should be airy, well lighted, and ventilated. The bed, preferably should be single, and of such a height that the woven wire mattress is two feet above the floor. A hair mattress is the best. The bed should be made warm during the operation by having hot water cans or bottles placed in it. These should remain about the patient until reaction is complete—care being taken to avoid burning the patient.

Diet.—During the first twenty-four hours nothing should be given. Rinsing the mouth with water will relieve thirst partly. If thirst is excessive, enemas of beef tea, eight ounces or a pint, may be given every four hours. This should relieve systemic thirst; but it will not relieve thirst due to a dry mouth or throat. On the second day one or two drachms of water every half hour may be given, to be increased or withheld according to the tolerance of the stomach. After thirty-six or forty-eight hours beef tea, one or two drachms, or an equal amount of milk and lime water or soda water may be given; and increased if well borne, the frequency of administration being decreased. If all goes well, on the fourth or fifth day water, practically *ad libitum*, may be given. After a week soft diet may be given, and after two weeks full diet.

Drainage Tube, and the Abdominal Wound.—In my judgment the drainage tube should be used unless there is some special contra-indication. If the drainage is not excessive, nor bleeding going on, it is best to surround the tube with sterilized cotton; with the bandage over all. In this way the tube is protected against infection between dressings. A rope of bi-chloride wet gauze should be passed down the tube to Douglas' pouch, and extend externally into the absorbent cotton. Used in this way most of the fluid poured out into the pelvis will escape by

capillary action, and draining the tube will be unnecessary more than twice or three times in twenty-four hours. In this way the tube can be managed by the surgeon. All soiled cotton should be removed at each dressing, and the outside of the tube be kept aseptic by washing with sublimate solution. It is well also to keep the gauze over the wound wet with bi-chloride solution, until the tube is removed. In draining the tube, the rope of gauze is removed, a pledget of aseptic cotton is seized with an aseptic forceps and passed down the tube. This is repeated until all fluid is removed. When the pelvis has been made dry, it is well to pass one pledget saturated with sublimate solution. The wet sublimate gauze drain is next inserted, and the cotton and bandage readjusted. This method of managing the tube has given perfect satisfaction in typical cases.

When drainage is excessive or hæmorrhage is going on, it is better to use the rubber dam about the tube, having it project through the bandage; this way it is more accessible for draining. The chances of infection are also greater. In this class of cases the tube must be drained often—even every fifteen or thirty minutes in case of bleeding. The piston syringe may be used to remove fluid; but I have found it unsatisfactory. It will not remove all fluid from Douglass' pouch.

The tube should be removed when the drainage ceases to saturate the gauze rope in the tube, especially if the drainage has become serous. In most cases the tube will remain in from one to three days. When the tube is removed early, the wound should be closed by tying a provisional stitch introduced during the operation. If for any reason it has been necessary to use the tube five or six days or more, it should be elevated from day to day, perhaps a shorter one substituted, and finally a plug of gauze, inserted through the abdominal wound, be used. In this way a sinus can at times be prevented. In such cases the judicious use of sublimate solution, and the peroxide of hydrogen solution within the tube track is of great value. These agents should be used on cotton carried down the tube in the grasp of a forceps.

The hands of the surgeon must be made aseptic before each dressing of the tube, and the tube forceps must be kept aseptic. By having the forceps well nickle-plated it can be washed before use in sublimate solution. After use it should be carefully washed with soap and water. With a little practice the surgeon can drain the tube with but llttle use of his fingers. Only the thumb and forefinger of the left hand need come in contact with the cotton or that part of the tube forceps which passes down the tube. The method employed is as follows: small rolls of absorbent cotton are wrapped in tissue paper, and sterilized in the steam sterilizer. A roll of cotton partly unwrapped is held by the nurse, the tissue paper serving to keep her fingers from touching the cotton. A pledget of cotton is seized by the tube forceps, lightly wrapped about the forceps by the thumb and index finger of the left hand, and then passed down the tube. It may or may not be necessary to steady the tube. The process is repeated until the pelvis is dry. It is manifest that if special care is taken in cleaning one thumb and forefinger that asepsis can be maintained. And this can be done with little expenditure of time.

A satisfactory method of dressing the wound is to use a wet sublimate gauze dressing until the tube is removed, and then to apply a powder consisting of iodoform one part, and boric acid seven parts. The deep sutures should be removed on the seventh or eighth day; at which time the wound should be supported with adhesive straps. Some days later the superficial stitches may be taken out.

The Bladder.—It is best to encourage the patient to void urine. When necessary the catheter must be used. Every care should be taken to avoid catheter cystitis. This is best accomplished by using a glass catheter, having it carefully washed in running water after use, and kept in sublimate solution until needed again. Before the catheter is used the vestibule should be wiped dry with absorbent cotton. Then the catheter, properly lubricated with vaseline, should be introduced, the parts being exposed.

The Bowels.—The bowels should be moved early—the second or third day. I believe that the pain after abdominal section is largely intestinal—due to flatus, or to irregular peristalsis—and that the best way to relieve it, is to open the bowels. The plan of giving a brisk cathartic shortly before operation so as to secure an early evacuation of the bowels, commends itself to my judgment, though I have not employed it. On the second or third day an enema is given; and should this fail, calomel in twelfth-grain doses, every half hour, or concentrated citrate of magnesia solution. (Four ounces equals one pint of official). Epsom and rochelle salts have proved too nauseating for my patients.

As an enema the following is used: Magnesia sulphet., two ounces. Ol. terebinth, one-half ounce. Glycerini, two ounces. Aquæ, q. s. ad., four ounces. This mixture is a very reliable purgative enema.

The bowels should be kept open at least on alternate days throughout the convalescence. Special care should be taken to prevent the accumulation of scybalous masses.

General Care, especially by the Nurse.—During the first few days, or period of thirst and pain, the patient should be encouraged to bear up, and be told that pain is quite the rule after abdomi-

nal section. Nervous, fretful patients must be impressed with the fact that nothing will be given that is not thought good for them, and that personal teasing appeals will avail nothing. As a rule, a good *morale* can be thus established. The nurse can do much to promote the comfort of the patient. During the period of thirst the face and hands should be bathed frequently with ice water or cold water and alcohol. And the mouth should be rinsed frequently with ice water or a weak solution of permanganate of potassium, or of peroxide of hydrogen. Glycerine and ice water will at times relieve "dry mouth" but generally the sweet taste of the glycerine is objectionable. The nurse should be given the rectal tube, and should use it whenever pain from flatus is present.

The bed ought to be kept strictly clean, and the sheets be kept smooth. The draw sheets and the bandages should be changed at least twice daily. The patient's back should be rubbed well with alcohol or soap liniment two or three times daily. She should be allowed to flex the legs and thighs, when the legs can be comfortably supported by placing a small pillow under the knees. Cotton wool pads or an air cushion should be provided to ease the back. Attention to these details adds much to a patient's comfort.

I believe that it is best to keep patients on their backs for two weeks after abdominal section. During the first week comfort is best attained by avoiding all motion. After eight or ten days the use of the bed rest permits sufficient change in position. After three weeks the patient may be permitted to sit up in bed. Hernias are best avoided by careful suturing, and by rest until firm union has occurred.

COMPLICATED CASES.

Shock.—Shock is met best by the application of external heat, the use of strychnia, digitalis, caffeine, and whisky hypodermically, and of decoction of coffee or beef tea by rectal enema. Within eight hours, thirty minims of the tr. of digitalis, one-eighth of a grain of sulphate of strychnia, and two or three grains of the citrate of caffeine may be given. If recovery is not prompt, one-half of a grain of the sulphate of strychnia, and one drachm of tr. of digitalis may be given in twenty-four hours, and an enema of beef tea, eight ounces to one pint, with whisky, one or two ounces, may be given every two or four hours. This treatment can be continued for some days. If much blood has been lost, large amounts of fluid will be absorbed from the rectum. A saline solution, also, may be injected into the areolar tissue under the skin. After one or two days, if rectal feeding is necessary, a more nutritious mixture should be substituted. I have used the following:

One egg; milk eight ounces; peptonize and add whisky one or two ounces. This quantity can be given by enema every six hours. If rectal feeding is kept up for many days, it is well to wash out the rectum daily with soap suds, so as to remove decomposing material, and prevent proctitis.

Vomiting.—Vomiting from ether cures itself. When vomiting continues more than two days, some other cause must be sought. If not excessive, vomiting will usually cease if no fluids are given by the mouth. A mustard plaster over the epigastrium, or a tumbler full of hot water will at times arrest it. If simple means fail, it will be found that the vomiting is due to peritonitis, or to impending obstruction of the bowels. In either case the bowels should be moved at all hazards. This is accomplished best by the use of the purgative enema already noted, given if necessary through the rectal tube into the colon. Broken doses of calomel can be given when other purgatives are rejected. Concentrated solution of citrate of magnesia, and seidlitz powders also can be used. The continued use of these agents usually will open the bowels. Secondary abdominal section for the relief of obstruction should not be undertaken too quickly, as not infrequently the bowels are moved only after repeated efforts; and moreover, the results of the secondary operation are not encouraging.

Fever.—When fever occurs the bowels should be kept freely open, and the body be sponged freely with cool water. The use of antipyretics is of doubtful value. When to re-open the abdomen for peritonitis, and when to trust to medical measures is a difficult problem. In general, when the skin is dry, the face flushed, and the pulse full and bounding, secondary operation will be unnecessary; but when the skin is "leaky," the extremities cool, and the pulse rapid and feeble, absorption of septic material is going on and operation is indicated. Unfortunately, the result usually is death.

Opium.—The use of opium in any form in typical cases of abdominal section is unnecessary. A little encouragement during the first day or two will enable the patient to stand the pain, and later it is quite bearable. Occasionally morphia is useful when a nervous patient becomes much excited and cannot otherwise be controlled. I feel convinced that the experience of the past few years has demonstated the fallacy of the doctrine that opium is curative in peritonitis; and that it finds its legitimate field in abdominal surgery in combating extreme nervous excitation, and in easing the last hours of the dying. Occasionally it may be used temporarily to relieve extreme pain.

Asthenia.—Asthenia must be combatted by the systematic use of nutritive enemas with whisky, together with the administration of such liquid

food as the stomach will bear. Champagne can often be given with advantage when other stimulants are rejected. Less can be done to combat asthenia by alimentation and medication after abdominal section than after other operations, because as a rule the stomach is not available. The fate of the patient is decided, in general, when the operation is completed.

"PYOKTANIN" AS AN ANTISEPTIC.

Read by Title in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY H. J. BOLDT, M.D.,
OF NEW YORK.
PROFESSOR OF GYNECOLOGY, POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; GYNECOLOGIST TO ST. MARK'S HOSPITAL AND THE GERMAN POLYKLINIK.

Among the remedies introduced as antiseptics lately, is one called pyoktanin, of which Prof. Dr. J. Stilling, of Strasburg, is the discoverer. The advantages claimed for this analine compound are that, 1, it is devoid of any injurious effect on the human economy or organism; 2, certainly and utterly destructive of all bacteria or other microörganisms absorbing it; and 3, that it is rapidly diffusible in, and permeant of, both healthy and diseased animal tissues or fluids, and perfectly penetrant through the enveloping membranes and internal substance of all bacterial colonies harbored by them.

The respective remedy, which is manufactured by E. Merck & Co., has been given a thorough trial by me in suitable cases for but a comparatively short time, but even with so short a trial, it has impressed me very favorably. The suppuration ceases more rapidly under its influence than under the use of other remedies, and that without producing any noticeable unpleasant effect on the system.

Stitch hole abscesses, two sinuses with thick pyogenic membranes, and purulent endometritis, were the conditions for which it has been put to use, employing a 1 per cent. *watery* solution, which is five to ten times stronger than recommended. Such strong solutions were used because those as recommended did not seem to me to do any better service, after a few trials, than some of our other antiseptics, which had the advantage of not discoloring everything with which they come in contact, that being the main disagreeable feature in connection with the use of pyoktanin—the discoloration produced being a deep purple, which can only be immediately removed from the hands by washing with soap liniment or javelle water. Clothing, etc., is destroyed by the stains, or the use of the javelle water required for washing them, hence some care must be exercised in its use. This unpleasant feature can, however, not come into consideration, if we remember that the conditions for which I have used it are of very obstinate character, and withstand our ordinary remedies with a tenacity which sometimes brings us to despair, with pyoktanin applications I have seen them yield almost invariably with ten to twenty daily applications. In the more mild forms, as stitch hole abscesses, three or four days sufficed to bring suppuration to cessation.

In the form of endometritis mentioned, the remedy is injected directly into the uterus with a Braun syringe, and so far, none of the unpleasant effects have been noticed which we are apt to see from iodine, etc. 1, the cervical canal is always patent in such conditions, so that over distension, if the injection is carefully made, never occurs; and 2, the remedy is non-irritant.

I have briefly stated my own personal experience, thereby hoping to stimulate my colleagues for a further trial. In carcinoma, for which it is also used very extensively, my experience is yet too limited to speak one way or the other.

IRON IN LARGE QUANTITY IN ANÆMIA.—In a very marked case of anæmia in a young girl of 19, H. Taylor, after being assured of the satisfactory condition of the digestive functions, prescribed for her a drink of a diluted solution of the perchloride of iron (v–xxv drops to 30 cc. (℥j) of water). He gave her to understand that the more she took day and night, the better it would be for her, and the sooner would she recover. She entered heartily into his plans, and in twenty-seven days took almost 900 grams (℥xxx) of tincture of the perchloride of iron (according to the British Pharmacopœia), instead of 100 grams, the maximum dose with most physicians. There were no unpleasant phenomena on the part of the digestive tract. To keep the bowels regular, he gave daily a pill of aloes and nux vomica. The result was complete cure after four weeks of treatment. The author recommends this mode of treatment, which allows the ingestion of large quantities of iron, without in any way interfering with the health of the patient. Should the iron commence to show any unfavorable effects (constipation, etc.), the patient should stop the medication, which no longer agrees with him.—*La Courrier Médicale; La Gazette Médicale de Montréal.*

UNIQUE PROCEDURE IN A CASE OF PHOTOPHOBIA.—A boy of 13 was affected with a panniform keratitis of both sides, with intense photophobia. Each time that the pupils were exposed to bright light, the boy was seized with violent sneezing. A pledget of cotton charged with a few drops of chloroform was introduced into the external auditory meatus and in a few minutes the eye could be opened without the occurrence of sneezing. The author (Gutteriez-Ponce) explains the effects of this local medication by anæsthesia of the Gassenian ganglion which is situated in the neighborhood of the auditing canal. This ganglion might be the center of the reflex action giving rise to the sneezing, consecutive to the impression on the retina by a bright light.—*Journal de Médicine de Paris.*

A BOUNTY of one hundred francs is offered to every married couple in France who shall add one more citizen to the State during 1892. It is hoped in this way to check the decrease in the French population.

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BY-LAW IV.—THE PUBLICATION OF PAPERS AND REPORTS.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it be placed in the hands of the Board of Trustees on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

Authors of papers are required to return their proofs within two weeks after their reception; otherwise they will be passed over and omitted from the volume.

Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

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SATURDAY, JULY 11, 1891.

ELIMINATION.

It may be accepted as true that microörganisms do their work by means of their chemical products. Whether their products be formed within or without the body, if they once gain admission to the blood stream they have full opportunity to produce their peculiar symptoms. Until suitable means shall have been provided for directly attacking the microörganisms themselves, there remain but two avenues of curative treatment open, viz.: the neutralization, and elimination of their chemical products. Leaving for the present the work of neutralization to the liver, the question of elimination presents itself as the one more easy of solution. Looking back to our fathers in medicine, whom perhaps we are too prone to neglect, we are at once impressed with the attention which they paid to this subject. Attend first to the *primæ viæ*, was their great watchword. Their purgatives and êmetics, their calomel and tartar emetic, were used much more intelligently than we use them to-day. Venesection was probably in most instances an eliminative procedure, and although now entirely out of fashion, it is fair to prophesy that it will soon again hold an honored place as a therapeutic measure, even if it must gain this place indirectly through the channel of relief to purely mechanical conditions of the circulation, as exemplified in the recent paper of Dr. H. A. Lafleur (Med. News, Vol. LIX., p. 5). In addition to the three great eliminative channels, the kidneys, the skin and the bowels, attention should be directed to the lesser or secondary channels.

To what extent respiration is eliminative is not established, although the poisonous properties of the expired air have long been known, yet it is probably true that the nervous symptoms which occur in the pneumonias, are partly, if not entirely, due to the mechanical limitation of this particular eliminative channel. Running sores are no doubt important means of elimination as well as possible sources of infection, and the layman's idea of the danger attendant upon the sudden healing of those old wounds, may not be entirely without foundation.

To what extent may one channel of elimination be substituted for another? Every practitioner knows only too well that the bowels as stimulated by active purgatives, and the skin as excited by the hot bath, and pilocarpin, furnish but a partial substitute for the kidneys. But does it follow that the channels themselves are at fault and that the means of stimulating them is of secondary importance? Should the channels alone be considered, or should they be thought of in connection with the means by which they are opened? The sweating produced by pilocarpin differs apparently in no way from the sweating which follows the use of antipyrin, acetanilid, or any other of our modern, so-called, antipyretics. Yet the results following the two remedies are essentially different. Ignoring the other actions of the antipyretic it is quite possible, nay probable, that the antipyretic sweat carries away other substances than does the pilocarpin sweat.

The blister as a means of securing elimination through the skin is in frequent use, but not so frequent as its importance warrants, while cups are relegated to the barber. Leeches are occasionally employed, but venesection dares not even lift its head.

To inflict a wound, for a medical rather than a surgical reason, would probably be considered cruel, and to even mention a seton in these days of asepsis, might lead to professional ostracism.

Nevertheless if elimination is to do its best for humanity, it must be studied broadly, and all phases of it utilized.

The interchangability of the several eliminative channels must be more carefully studied, the best channel, or channels, to appeal to in given conditions, and the best means of opening these channels under the particular circumstances, must be worked out at the bedside, and finally those neglected means of elimination, whose assistance at a critical moment may save life, must be resurrected, and the despised blister, lancet, and seton again called back to active use, and again given their proper sphere.

SCIENCE COURSES PREPARATORY TO MEDICINE.

In a recent number of THE JOURNAL was published a circular sent out by the Illinois State Board of Health to about 200 literary and medical schools in the United States. We learn from the Board that about twenty-five literary institutions have already adopted, or signified their willingness to adopt, science courses leading to the study of medicine. It is gratifying to note, that in addition to some large universities, some of the smaller colleges have recognized the fact that a young man must have a special training in science to be prepared for the study of medicine.

It has been objected to courses preparatory to the study of medicine, and even to higher medical education, that the people have not yet demanded scientific physicians. This is not entirely true. The representative newspapers of the country are demanding better educated physicians, and in any event, the medical profession must take the lead in this matter. The longer and better courses of study in the medical colleges are due to prolonged agitation, begun by the medical profession. The same will be true of whatever is done in the way of establishing science courses preparatory to medicine. That such courses are profitable no one can doubt. The President of Tulane University of Louisiana writes: "The College and University give every one the opportunity to go to the medical college prepared. When they do so, they always succeed in taking the prizes of the medical department, the posts of resident students in the Charity Hospital, twenty-eight in number. All who have tried have, on competitive examination, taken a resident's place."

The statement made by President Johnson is confirmatory of the opinion of thinking men, that after an ordinary high school or classical course the young man is not prepared to begin the study of medicine, while a proper science course gives the needed preparation; and that the student who takes such a course gains a liberal education—as liberal as that offered by any classical course. As was aptly pointed out by Dr. Gardiner in his presidential address before the British Medical Association a few years ago, the physician must be a naturalist, a student of nature, and the foundation of his knowledge must be laid in scientific studies. There is no good argument against science courses, preparatory to the study of medicine, and it is gratifying to know that some of the literary institutions are taking up the matter so earnestly. They would not have done so had they not recognized a demand for such courses and a demand for better educated physicians. The drift of human thought is more and more toward pure science and its application to human progress.

HIGHER MEDICAL EDUCATION.

The cause keeps marching on. At the late meeting of the Indiana State Medical Society, the following preamble and resolution were adopted:

WHEREAS, Responding to the demand for advanced and thorough medical education, the schools of regular medicine in Indiana have made compulsory on all students matriculating for the first time after this date, as a pre requisite to graduation, four years' study of medicine, and three full courses of lectures of six months each, therefore,

Resolved, That this Society heartily endorses such action, and, as a matter of simple justice to those schools who have taken this advanced position, we respectfully request the authorities of this State to consider and class medical schools, who demand less than the above requirements, as institutions not reputable, and their diplomas unworthy of recognition.

N. D. COX, M.D.
WM. FREEMAN, M.D.

Unanimously adopted.

We are pleased to also announce that the Indiana State Board of Health are in full sympathy with the above, and will take similar action as one of the standards of requirement.

DR. JOHN H. RAUCH.

At the last meeting of the Illinois State Board of Health, this veteran official tendered his resignation as Secretary of the Board. For more than a quarter of a century DR. RAUCH has given a whole-hearted and enthusiastic service to the cause of sanitary science, and to an elevation of the standard of medical education and practice. In these departments his labors have been characterized by such ability and good judgment as to win the plaudits of right thinking men on two continents. That he has been untiring and indefatigable in the prosecution of his plans, there can be no question; their accomplishment is known to the world.

In noting the recent action of the Kentucky State Board of Health, and of the Indiana State Medical Society, we could not but feel that the sentiment back of their resolutions, was largely due to the work that is now laid down by this honored servant of his profession and the public. At the same time we thought of the sense of profound satisfaction that must fill his soul as he contemplates the grand results which have been achieved, and to so great an extent through the instrumentality of his own work.

EDITORIAL NOTES AND ITEMS.

NEW EFFERVESCENT PREPARATIONS.—Among the granular effervescent preparations, recently brought out in England, are the following: Citrate of caffein, three grains to the drachm; salicylate of soda, ten grains to the drachm; sulphur compound according to Garrod's formula; and cascara sagrada, two grains in each drachm. The *Lancet* reports that an analytical examination has been made, which shows that the weights and proportions were correct as claimed by the makers. The preparations were found to be readily soluble, and the granulation of them had been accomplished with all necessary care. These appear to be especially acceptable to children, who will often take a preparation that "fizzes"—as they say—although the drug contained in it may be anything but pleasant to the taste.

THE BOARD OF HEALTH OF NEW YORK CITY.—Col. Emmons Clark, the experienced secretary of the Board of Health of New York City, has contributed to the *Popular Science Monthly Magazine* a history of the workings of that Board during the quarter-century during which the author has been officially connected with sanitary administration. Althongh a trifle bureaucratic and colorless in its composition, Col. Clark's sketch is a model of condensation, and will interest report-making sanitarians all the world over. A few lines comprise, oftentimes, the work of years and the best efforts of a regiment of toilers. The great city of which he writes was virtually devoid of any sanitary administration until 1866, when the popular dread of an epidemic of cholera compelled the enactment of an efficient sanitary police law. Since that time the Board has been remodeled from time to time in the interests of "hungry politicians," but there have always been some good and honest workers in its service. Progress, amid many interruptions and in spite of many discouragements, has been the rule. Some of the earlier printed annual reports of the Board are extremely valuable. The accomplishment of the Board in regard to the check and regulation of infectious diseases, appears to have been the strongest single feature of its work. One of the peculiarities in the New York Board is the fact, the law forbids that a medical man shall be its president. A chemist or a cotton broker may become the sanitary standard-bearer of the metropolis, but a physician never. But the law may be changed before many years have passed by, possibly at the next session of the State Legislature. The present enactment is an anachronism from the medical standpoint, and will undoubtedly soon be rescinded.

HONORS.—The degree of LL.D. has been conferred by Wabash College upon Dr. Joseph Eastman, of Indianapolis. The same degree has also been conferred by the University of South Carolina upon Dr. F. Peyre Porcher, of Charleston.

"IT HAS recently been ascertained that the vapor of vitriolic ether, when inhaled into the lungs, produces effects upon the brain and nervous system similar to those of nitrous oxide gas. This fact was no sooner made public than a thousand experimenters started up, including all ages and both sexes. The smell of ether prevailed everywhere. Even the little schoolboys were seen clubbing their pennies to purchase a vial of the exhilarating fluid, which was put into a paper bladder and eagerly passed from one to another, in some unfrequented spot. We

might, perhaps, feel amused at the ridiculous capers supposed to be cut by those groups, had no serious consequences resulted from it. But having ourselves witnessed the serious indisposition of several young ladies, which could be ascribed to breathing ether, and read of two well attested cases in which the practice proved fatal, it behooves us to condemn the use of the fluid by inhalation as highly pernicious and dangerous."—(Portfolio by Oliver Oldschool, Esq., July, 1824, p. 326.)

AN OPHTHALMIC HOSPITAL IN CINCINNATI.—Dr. Robert Sattler has given a valuable property for the establishment of this institution. A staff and dispensary service have been organized, and arrangements made for giving special instruction to students.

DOMESTIC CORRESPONDENCE.

Diphtheria.

To the Editor:—Some twelve or fifteen years ago I wrote an article on diphtheria which was published in a local paper, claiming it to be an affection of the pneumo-gastric nerve. And now, after long and careful observation, I am impelled not only to confirm that earlier statement, but to add to it the result of maturer consideration by bringing to your notice a more detailed account of my idea of this troublesome disease.

I believe the entire eighth pair of nerves to be affected. I believe the diphtheria microbe or bacterium to have an especial affinity for this pair of nerves, causing an inflammation of them, affecting particularly the glosso-pharyngeal and pneumo-gastric; but involving also, occasionally, the spinal accessory.

If any medical gentleman will spend two hours in refreshing his memory on the exact distribution of the two first named, and then sit by the side of a patient suffering from diphtheria and carefully compare the location of the affected parts with the distribution of these nerves, I think he will come to the same conclusion.

As to the false membrane, I have always regarded it as a passive exudation caused by the loss of nerve force of the capillaries of the parts from which it exudes. One of the first and most positive diagnostic symptoms of diphtheria is the enlarged tonsil covered with false membrane. Gray says as to the anatomy of the tonsil: "Its inner surface presents from twelve to fifteen orifices, leading into small recesses, from which numerous follicles branch into the substance of the gland. These follicles are lined by a continuation of the mucous membrane of the pharynx covered with epithelium, their walls being formed by a layer of closed capsules imbedded in the sub-mucous tissue. The capsules are analagous to those of Peyer's glands. They contain a thick, greyish secretion. The nerves are derived from the fifth and the glosso-pharyngeal."

Now, is it not reasonable to believe that the loss of contractile force of the small nerves of the tonsil from the inflammation of the parent nerve, together with the devastations of the microbe in the tonsil, largely increase the "greyish secretion," and that this exuding through the "twelve or fifteen orifices," has something to do with the formation of the false membrane? That looks reasonable to me and I believe it to be the true source of this false membrane, as well as of all that found in this nerve tract. I believe these exudations to be similar to the petechial exudations over the chest and abdominal regions in cerebro-spinal meningitis, typhus and low grades of typhoid fever. When the spinal cord is implicated exudation takes place from want of nerve contractile force of the peripheral aspect of the spinal nerves and forms in scales, nodules, etc., of various sizes and appearances.

Treatment.—The problem of treatment may be readily formulated. If the streptococcus of diphtheria selects the eighth pair of nerves and branches for its terrible ravages, have we a germicide with an equal affinity for the same region? I am ready with an emphatic Yes! We undoubtedly have such a germicide in the different preparations of mercury, especially calomel. The uniform success of the treatment which I have adopted is the rock on which I found this statement.

Calomel was used with success as far back as 1825, although physicians of that date had no idea of the reason for this success with that specific, nor has, hitherto, any explanation been attempted. I quote from the London Medical Repository of December, 1826, page 499:

"Mercury, which seems to exert a direct and almost specific influence upon inflammation of the mucous membrane of the throat and air passages, has been highly extolled by the French physicians in the treatment of diphtheria. It was first employed by Dr. W. Connolly, of Chettenham, then resident physician at Tours, and with such success, invariable, that the French practitioners, although with some reluctance, adopted it in their practice. To secure it success the full mercurial influence is necessary; with this object, two grains of calomel are to be given every two hours."

In my own practice I have adopted the following:

I give from one to five grains of calomel every five hours, according to the age of the patient, with no other treatment except cleanliness and good nursing.

The medicine is easy of administration by putting it on the tongue and giving a sip of water.

I think two or three brisk operations on the bowels, a day, beneficial for the first two or three days, but should the cathartic effect be too great it is easily checked by a little Dover powder. It is surprising what an amelioration of all symptoms takes place after three to five days of this treatment. The false membrane dissolves and disappears, the microbes become inert from the specific action of the mercurial poison, the temperature becomes normal, the pain and swelling are gone, the appetite returns, and above all, that unaccountable nausea and vomiting, which follow a week or ten days in the wake of

diphtheria, never put in an appearance. More than all, I have yet to see a case of paralysis of even the soft palate follow diphtheria when this treatment has been adhered to from the beginning. When called to see a diphtheria patient, in addition to above treatment I give to other children of the family that have been exposed to contagion, from one to four (according to age) one-tenth grain calomel pills every five hours for two or three days as a preventive, with uniform success, a large majority thus treated escaping the disease or suffering only a light touch of it, the germicide entirely protecting those parts usually affected by diphtheria.

Do not be afraid of the calomel. The verge of ptyalism must be reached in order to secure the best results.

We do not fear salivation now as we did when I first began the practice of medicine, over fifty years ago. At that time we could not control it; now, with chlorate of potash, we regulate it with absolute certainty.

If medical gentlemen who have the opportunity of making post-mortems upon patients having died of diphtheria will thoroughly investigate the changes that have taken place in the eighth pair of nerves, and, if it presents the appearances which I believe it will, my theory will be perfectly established, at least in my own mind, and I shall feel greatly indebted to them if they will report the same to me or to THE JOURNAL of the Association.

DR. W. R. MCMAHON.

No. 312 South Front street, Mankato, Minn.

Forced Respiration. Letter from Dr. Fell.

To the Editor:—Your correspondent, Dr. Herzog, of Hoboken, N. J., leads me to believe from the tenor of his article on "Forced Respiration," in the May 9th number of THE JOURNAL, that he has not read my address upon this subject with that care which it deserved. Had he done so, I am inclined to believe that so much of the valuable space of THE JOURNAL would not have been given to the elaborate account of an instrument which undoubtedly was never used to save human life; or, if it had been, it would likely have failed ingloriously. I will not now be surprised if some one should add that Hippocrates had thought of forced respiration, and even devised an apparatus to perform it with. John Hunter did both, and possibly others, but we have no record of any of these noted men having applied their invention to the saving of human life. See Prof. Horatio C. Wood's remarks in his address before the Berlin Congress, in which he says: "but I have not found that either Hunter or Richardson treated by forced artificial respiration, an actual case of disease or poisoning."

In all this apparatus a grave defect existed, in my opinion, in that provision was made to exhaust the air from the lungs; this complicates the apparatus, and, furthermore, is not in accord with physiological conditions, as inspiration is a forcible measure, while expiration, being passive and produced by the elasticity of the fibro-elastic tissue of the lungs, does not call for the utilization of mechanical means to produce it. I also believe that an apparatus provided with means for exhausting air from the lungs, would prove a very dangerous instrument to place in the hands of the average physician in an emergency case.

However, no one will question that Richardson, Hunter, the designer of the apparatus mentioned in Dr. Herzog's letter, and several others whom I could cite, have prepared or invented instruments for forced respiration upon human beings.

With all their labor, what did they accomplish? Was a single human life saved by them? Did they demonstrate the wonderful possibilities of the method? Let us see. After my first operation with the instrument used in my physiological laboratory, and with which, notwithstanding its defects or adaptation for the purpose, I had succeeded in keeping my patient alive for nearly three hours, until he breathed for himself, I looked up the home and foreign literature on the subject. Nothing was discovered which appeared to controvert the fact, that I was justly entitled to the credit of being the first to systematically and practically solve the question of the value of forced respiration in the saving of human life; or that I had demonstrated, as one physician puts it, "that air can be forced into the lungs without any damage to them." Whatever has been accomplished, also should be stated, was without any previous knowledge of the failures in the same field, which had antedated my efforts.

I can say, with the practical knowledge obtained from operating upon human beings, that the instruments used in the physiological laboratory do not meet the conditions to be successfully overcome in breathing for a human being for any length of time. They may answer in some instances as a make shift, but the work is carried on at a great disadvantage, and with many chances in favor of producing, instead of averting, a fatal result. They were never intended to be used upon human beings. The instrument originally devised by myself in all its practical details, and with which the results tersely detailed at the end of this letter were accomplished, was founded upon the experience obtained in my first case, and the results of my labor with it so over-whelmingly annihilates any controversy in opposition to its use, that it is needless to do more than present them to the profession. Had similar results or demonstrations been accomplished at the hands of others in the past, nothing could have prevented them from receiving the widest publicity in the medical literature of the day, but no record is found which detracts from the practical value and originality of my labors. As a physiologist, I was acquainted with the apparatus used in the physiological laboratory, from the simple bellows with nozzle poked into the trachea of a dog, to the more complicated constant Sprengle blower with interruptor, which admittedly would be of no use as an emergency instrument.

The apparatus I have used meets all requirements for forced respiration in man, with or without tracheotomy, and in the *simplest manner*. It covers all the methods which can be utilized in the operation, is adapted to be used out of doors or in a cold atmosphere, but may be modified by an arrangement to provide a constant air supply and automatic inspirator, which would, however,

increase the cost, and do away with the emergency feature of the apparatus, as now used.

Dr. Herzog's article, possibly without intent, would naturally lead to the inference that the subject is old, not worth considering; its tenor is not uncertain. The truth is that the work in forced respiration, prior to my own, and running through the past century to a great extent, had simply relegated it to the list of unjustifiable procedures. Do we find anything previous based upon *results* recommending us to use forced respiration after all other methods of artificial respiration had failed? On the contrary, we do find in every medical work treating on the subject, the "Ready Method in Asphyxia of Marshall Hall," the highest accepted authority, that we *must avoid the use of bellows* or any forcing instrument.

Now I propose to talk plain, as it seems entirely unnecessary at this late date to mince words upon this subject. The practical introduction to the world of the value of forced respiration in the saving of human life, the demonstrations which indicated its great possibilities, must be accredited to an American, and the work of others in the past had nothing to do with the results which were original in conception and practical application.

The question simply amounts to the difference between failure and success; will the credit be accorded to those who failed or the one who succeeded? If Columbus had prepared his ships, but not sailed across the Atlantic, would he have discovered America?

What also must be admitted by those who are inclined to accord justice to whom it is due, is that the practice of vivisection in the colleges and laboratories of the land, had no relation whatever to the saving of human life, or had it been ever taught in medical institutions, systematically or otherwise, as of any value in saving human life. For over eight years prior to my first operation of forced respiration upon a human being I had been a practical vivisectionist in the physiological laboratory, and during that time I never heard it even hinted that a human life might be saved by the laboratory methods.

It was in the field of paralysis of the respiratory centres from opium that I began my work with forced respiration and the demonstrations as to its efficacy, from the first, could not be questioned. Each and every case saved had passed beyond the limit of hope so far as all known and systematically applied methods of resuscitation were concerned. To be denied the credit which should in all fairness be accorded to the practical originator of a method of such far reaching importance in the saving of human life is what I could not quietly submit to. "Honor to whom honor is due."

RÉSUMÉ OF CASES OF FORCED RESPIRATION TO DATE.

Case 1.—Buffalo, N. Y., adult, morph. sulph., 20 grains taken. Artificial respiration and antidotes had failed. Case given up as hopeless. Dilatation of pupils, last stage of asphyxia taken place. Forced respiration for two and one-half hours, with difficulty on account of incomplete apparatus, saved patient.

Case 2.—Prof. Dr. Boehm, Vienna, Austria. Two months later, and after Case 1 had been fully reported to the Medical Congress at Washington, and published by the public press. Adult. Nearly 8 grains morph. sulph. taken. Artificial respiration failed and forced respiration saved the life of the patient.

In these two cases the methods used in the physiological laboratory were applied.

Case 3.—(Dr. Fell's 2nd Case), adult. Tr. opii. ʒii taken, all absorbed. Artificial respiration, antidotes, pushed to utmost, but they failed. With my new apparatus adapted to forced respiration on man, this patient was kept alive for fourteen hours before he could breathe for himself, and made a good recovery.

With the laboratory apparatus as used in my first case I could not have saved the patient.

Case 4.—Dr. Fell, Buffalo, N. Y. Adult. Tr. opii. ʒii, taken. Anterior jugular vein and trachea severed by a razor. Hæmorrhage very profuse, patient almost exsanguinated. A corps of hospital physicians had given up the case. The coroner and undertaker even on hand with a coffin. At 5 o'clock P.M., I began breathing for the patient by forced respiration. 9 P.M., patient first conscious; 4 A.M., case considered hopeless; intravenous injection of salt solution ʒvi; 10 A.M., patient improved. At 1:30 P.M., or twenty-one and one-half hours from the time forced respiration was first instituted, the patient was left for a short time to breathe for himself. Becoming tired he requested the renewal of the forced respiration so that fully one whole day was used in forced respiration before auto respiration was thoroughly reëstablished. This gentleman is now living in good health at Wheeling, W. Va.

A few months after this my third case, these three gentlemen whose lives had been saved by my labors voluntarily appeared at my request before a section of the New York State Medical Association at Buffalo.

Case 5.—Dr. Fell, Buffalo, N. Y. Adult, 80 years of age. Tr. opii. ʒi taken. Forced respiration kept patient alive twelve and one-half hours after he had been given up by a hospital staff.

Case 6.—Dr. Fell, Buffalo, N. Y. Infant only 18 days old. Morph. sulph. 1 gr. given by mistake of a homœpathic physician.

Five hours after this large amount, equivalent to about eighty doses, forced respiration per tracheotomy kept the child alive nearly five hours. The results in this case were startling in the manifestations produced.

Case 7.—Dr. Fell, Buffalo, N. Y. Morphia in large but unknown quantity taken. Operation of tracheotomy undertaken after the pulse at both wrists lost; dilatation of asphyxia had taken place; auscultation failed to detect heart action; blood venous on tracheotomy. Forced respiration produced the return of the pulse at both wrists, and clear action of the heart on ausculation; blood became arterial; heart ceased beating in about one hour.

Case 8.—Dr. Fell, Buffalo, N. Y. Still born infant. Compression of brain prevented forced respiration from proving successful.

Operation suspended before heart ceased beating.

Case 9.—Dr. Fell, Buffalo, N. Y. Adult. Tr. opii, 2 ounces taken. Face mask held life until tracheotomy

made. Eleven hours of forced respiration saved patient.

Case 10.—Dr. Fell, Buffalo, N. Y. Adult. Morphia, 5 grains to 10, and tr. opii, 2 ounces taken. Forced respiration for fourteen hours saved patient.

Case 11.—Dr. Fell, Buffalo, N. Y. Young woman had taken 1 or 2 ounces tr. opii. Forced respiration for four hours with face mask saved patient.

Cases 12, 13, 14.—Dr. C. R. Vanderburgh, Columbus, Ohio. Three cases, face mask used. Forced respiration for two to four hours saved patients.

Case 15.—Dr. Fell, Buffalo, N. Y. Adult female. Morph. sulph. in large quantities taken. Forced respiration for seven hours kept patient alive, where Sylvester's method of artificial respiration in the hands of another physician signally failed to prevent returning cyanosis. Forced respiration with face mask quickly overcome it, but was given up for Faradayism which resulted fatally. Forced respiration would have saved this case.

Case 16.—Hospital case reported as saved by the Fell method. Particulars not obtained.

Case 17.—Dr. Fell, Buffalo, N. Y. Young lady medical student took 15 grains of morphia. Forced respiration with face mask for three hours, and per tracheotomy for about ten saved her life.

During this case auscultation failed to detect heart action and pulse at wrist was absent for a time.

Case 18.—Dr. Fell, Buffalo, N. Y. Adult. Over doses of phenacetin, morphine and cocaine taken accidentally. Forced respiration for eleven hours with the face mask, and per tracheotomy for about seven, failed to save life. Dr. Fell was absent some time before death took place.

Oxygen gas was used in connection with the apparatus with good results in these last two cases.

Case 19.—The value of forced respiration as a tiding-over measure in various conditions was exemplified in the following case. An old lady, seventy-three years of age, had taken, through the careless of a druggist, a dose of aqueous solution of corrosive sublimate. It resulted in producing a condition of shock; cyanosis was supervening, and death, which was inevitable, would have soon ensued. Forced respiration with the face mask easily applied, toned up the system so that respiration was much improved, and the patient lived about two days longer for the treatment.

Oxygen gas in this case, probably at too late a period, had no influence on the case.

I have received indefinite reports of cases occurring at other points which I am unable to report at this time. The record is sufficiently full to indicate the wonderful results of the method.

As the necessity has arisen by which the successful methods in forced respiration may be distinguished from those which are obsolete or impracticable and have resulted in casting a ban upon a most valuable operation by which, when properly applied, many human lives may be saved, I suggest that my method be known as the *Fell method of forced respiration.* Briefly it covers the method per tracheotomy, face mask or intubation tube, with the regularly intervaled respiratory movements indicated by the bellows, and controlled by the air valve in the hands of the surgeon; or the use of the bellows and other factors without the intervention of the air valve.

Very respectfully, GEO. E. FELL, M.D.

72 Niagara St., Buffalo, N. Y.

BOOK REVIEWS.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW. DISCUSSION ON ANÆSTHETICS. Edited by J. WALKER DOWNIE, M.B., F.F.P. and S.G., Secretary. Glasgow; 1891. pp. 136.

This little book is a reprint from the *Glasgow Medical Journal* of a discussion on the subject of Anæsthetics which took place at three successive meetings of the Medico-Chirurgical Society of Glasgow, held respectively October 17, 24 and 31, 1890. There is an introduction by Dr. William Macewen, and papers as follows: "The Action of Anæsthetics on the Respiration and Cardiac Action, and on the Risks Incident to this Action," by Dr. Joseph Coats; "On the Relative Value of the Various Anæsthetics," by Dr. T. Brown Henderson; "Ether as an Anæsthetic," by Dr. Hartley, of Leeds; "On Primary Chloroform Syncope," by Dr. Robert Kirk; "Thirty-five Years Experience of Anæsthetics," by Sir George MacLeod; "Anæsthetics in Relation to Midwifery," by Dr. William L. Reid; "Anæsthetics in Dental Practice," by Dr. Woodburn; "Nitrous Oxide, Cocaine and other Anæsthetics," by Dr. W. J. Fleming; "Causes of Death Under Chloroform," by Dr. Beatson; "On Various Anæsthetics, with Special Reference to Methylene," by Dr. G. A. Turner; "The Chemical Aspects of Anæsthetics," by Dr. George Buchanan; "Experimental Observations and Inferences Relating to the Physiological Action of an Overdose of an Anæsthetic," . . . . "Indications of Danger in Chloroform Narcosis," by Dr. David Newman; "The Administrations and Dangers of Anæsthetics," by Dr. James Dunlop; "Special Remarks on Ether," by Mr. H. E. Clark; "Anæsthetics in Diseases of the Heart," by Dr. Alex. Robertson; "Anæsthetics at the Children's Hospital," by Dr. Ness; "Anæsthetics in Practice," by Dr. Walker Downie; "Anæsthetics in Obstetric Practice," by Dr. Samuel Sloan. Besides the formal papers above mentioned, there are brief discussions by Dr. Murdoch Cameron, Dr. Renton, Dr. Hector Cameron, Dr. McConville, Dr. Carmichael, Dr. McGregor Robinson, Dr. Stirton, Dr. Lapraik and the president of the society, Dr. William Macewen. The society has shown a commendable desire to avoid redundancy in both the papers and the discussions, and their conciseness adds to their value. The results of the Hyderbad Commission are sustained, and in conclusion, Dr. Macewen gives the most cogent reasons for his adherence to chloroform, and while he clearly states his preference, is undoubtedly fair to the adherents of ether. He gives a statement of the dangers of ether in its after-results, in which bronchitis and pneumonia are mentioned. He

omits mention of the most serious of all, and that is, the fatal renal congestion that may follow the prolonged use of ether in cases of fatty kidney, or, indeed, in any stage of nephritis. In such conditions ether is, without doubt, wholly contra-indicated. The book as a whole is a worthy companion to the recent report of the Hyderbad Commission and the well-known text book of Prof. Lyman. J. B. H.

NECROLOGY.

DR. JAMES K. THACHER, of Yale Medical College, died April 21, 1891, aged fifty-four years. He was the eldest son of the late Professor Thomas Thacher of Yale, and a graduate of that university in 1869. Ten years later he took his medical degree from the Medical Institute at New Haven. The interval had been filled by several series of original investigations regarding comparative anatomy and physiology; part of the time being, also, taken up by his duties as a college instructor. The Transactions of the Connecticut Academy of Sciences contained the results of his studies, which attracted the attention of the scientists in all parts of the world. He claimed that the limbs of the higher vertebrates were developed from the fins of fishes, a view sufficiently novel at the time he advanced it, but which has since been strengthened by later investigations. He became Professor of Physiology soon after graduating in 1879, and engaged in general practice. He received an appointment in the New Haven Hospital, and the chair of clinical medicine was added to that of physiology. He was one of the medical editors of the new Century Dictionary.

MISCELLANY.

MITCHELL DISTRICT MEDICAL SOCIETY.—The annual meeting of this Society will be held at West Baden Springs, Thursday and Friday, July 16 and 17, 1891.

Thursday, July 16. Morning session, 10 A.M. Calling Society to order.

1. Welcome to visitors, A. M. Owens, M.D.
2. Greeting and welcome to visitors from other States, Edwin Walker, M.D., President Indiana State Society.
3. Response, Kentucky and Ohio.
4. Report of Society.
5. Reception of new members.

Afternoon Session, 2 P.M.

6. "Antiseptic and Aseptic Surgery," J. B. Duncan, M.D., Petersburg, Ind.
7. "Excision of Varicose Veins," J. T. Freeland, M.D., Bedford, Ind.
8. "Suicide," T. M. Kyle, M.D., Aurora, Ind.
9. "Technique in Laparotomy for Diseases of the Tubes and Ovaries," W. H. Wathen, M.D., Louisville, Ky.
10. "Inflammation," Chas. Knapp, M.D., Evansville.
11. "Septic Infection of the Newly Born," Geo. T. McCoy, Columbus.
12. Paper, A. J. McDonald, Bedford, Ind.
13. "Importance of Local Treatment in Scarlatinal Throat Affections," Thomas Hunt Stucky, M.D., Louisville, Ky.

Evening Session, 8 P.M. "Conversazionez."

Friday, July 17, 8 A.M.

14. "School Hygiene," T. F. Wood, M.D., Wertz, Ind.
15. "Puerperal Eclampsia," T. S. Galbraith, M.D., Seymour, Ind.
16. "Antipyretics," E. S. Elder, M.D., Indianapolis.
17. "Intestinal Obstruction, caused by an Abdominal Tumor with Twisted Pedicle, Laparotomy, Recovery," Thad. A. Reamy, M.D., Cincinnati.
18. "The Tampon in Rectal Surgery," J. M. Matthews, M.D., Louisville, Ky.
19. "The Best Method of Treating Fractures of the Femur," A. M. Owens, M.D., Evansville.
20. "Truss Treatment of Inguinal Hernia," J. W. Marsee, M.D., Indianapolis.

Afternoon, 1:30 P.M.

21. "Hypertrophic Rhinitis," T. C. Kennedy, M.D., Shelbyville, Ind.
22. "Management of Office Gynecological Patients," Edwin Walker, M.D., Evansville, Ind.
23. "Spinal Curvature," J. A. Comingor, M.D., Indianapolis.
24. "Granulated Lids," D. S. Reynolds, M.D., Louisville, Ky.
25. "New Methods of Treating Tuberculosis," Theo. Potter, M.D., Indianapolis.
26. "Limitations of Palliative Treatment of Enlarged Prostate," W. N. Wishard, M.D., Indianapolis.

Volunteer papers and case reports are solicited.

The management at West Baden Springs has made a rate of $1 or $1.50 per day (according to room) on account of those in attendance at this meeting. Season tickets are on sale at all principal railroad offices.

So far as possible, the Society will endeavor to accommodate those presenting papers to suit their convenience.

Officers of the Society: President—A. M. Owens, M.D., Evansville; Vice-President—H. W. Shirley, M.D., Shoals; Secretary—Geo. W. Burton, M.D., Mitchell.

THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS will hold its fourth annual meeting at the New York Academy of Medicine, 17 West Forty-third St., in the City of New York, Thursday, Friday and Saturday, September 17, 18 and 19, 1891, under the Presidency of Dr. Adam H. Wright, of Toronto. All physicians interested in the discussion of subjects pertaining to abdominal surgery, obstetrics and gynecology, are invited to attend without further formal notice. By order of the Executive Council.

WILLIAM WARREN POTTER, M.D., Sec'y.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from June 27, 1891, to July 3, 1891.

Asst. Surgeon Edward C. Carter, relieved from duty at Ft. Walla Walla, Washington, and assigned to duty at Ft. Canby, Washington.

Asst. Surgeon C. B. Ewing, U. S. A., is granted leave of absence for one month.

Asst. Surgeon J. O. Skinner, U. S. A., upon the abandonment of Ft. Davis, Tex., will proceed to Ft. Clark, Tex., and there take station.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Three Weeks Ending June 27, 1891.

Surgeon J. B. Hamilton, ordered to Washington, D. C., on special duty. June 9, 1891.

Asst. Surgeon H. D. Geddings, ordered to New York, N. Y., on special duty, June 13, 1891. Ordered to Washington, D. C., on special duty, June 26, 1891.

Asst. Surgeon C. P. Wertenbaker, when relieved at Galveston, Tex., to proceed to Chicago, Ill. for duty. June 23, 1891.

Asst. Surgeon A. C. Smith, relieved from duty at New Orleans, La.; ordered to Galveston, Tex. June 23, 1891.

Asst. Surgeon W. G. Stimpson, ordered to New York, N. Y., for temporary duty. June 12, 1891.

Asst. Surgeon M. J. Rosenau, when relieved at Chicago, Ill., to proceed to New Orleans, La., for duty. June 23, 1891.